1019-18

Johns-Manville



BONDED BUILT-UP ROOFS



FRANKLIN INSTITUTE

DESCRIPTIONS A PORT DESCRIPTION



FOR 29 years, Johns-Manville has been mining and manufacturing products from abesitos, areadily acquiring through those years a repotation for quality——quality based not only opon exceptional facilities for securing the highest grades of raw material——as one would expect from the largest asbeston mine in the world——but also the quality which results from years of research and experience in fabricating subcated in its eleven face factories shroughout the United States.

For very of those "9 years, Johns Manyille has combined the facilities of a great mine with the expert knowledge and skill of a large town factorer in the making of asbestia roomings, controlling every step from mine to market, to the district advantage of every present or prospective user of a folios Manyille Basinay Roof.

In the pages which follow are discussed the inherent qualities which make a roof dependable, long-lived and fire remeans and the leaves breaches which will access from proper materials, properly applied.

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JOHNS-MANVILLE Complete BUILT-UP ROOF SERVICE

Realizing that no one type of built-up roof can be acceptable or usable under all conditions, and recognizing the factor of individual preference, Johns-Manville has developed a number of different types of built-up roofs and is in a position to furnish a roof to meet practically any condition or personal preference.

The various standard J-M Built-Up Roofs are tabulated and a condensed specification given on pages 12 and 13, with ratings of the Underwriters' Laboratories, Inc. They are classified on the basis of quality, the kind and slope of deck, the type of finish, felt, etc. Detailed individual specifications begin on page 14.

J-M Smooth-Surfaced Asbestos Built-up Roofs

While Johns-Manville furnishes built-up roofs of every type, the smooth-surfaced asbestos roof is recommended as the one best designed to stand up under all conditions and to give complete trouble-free protection for the life of the building.

J.M Smooth-Surfaced Asbestos Built-up Roofs are the outcome of several decades of study and experience in producing durable, fireproof, weatherproof, lightweight roofs at a moderate cost. They are suitable for practically every type of industrial building, warehouse, office building, hotel, hospital and apartment-house.

They are built up of alternating layers of asphalt-saturated asbestos felt and roofing asphalt.

J-M Asbestos Felts, with which J-M Bonded Asbestos Roofs are built up, will not support combustion even when impregnated and coated with asphalt. The Underwriters' Laboratories, Inc., give Class A ratings to many different types of J-M Asbestos Roofs. They are fire-resistant to the highest degree.

J-M Bonded Roofing Asphalt—a relatively recent development in asphalt processing which has proved to be far superior to ordinary asphalts—is used on all J-M Bonded Asbestos Roofs. Tests at the Johns-Manville Research Laboratories at Manville, N. J., have demonstrated that the unusual ability of J-M Bonded Asphalt to stand up under all conditions of service will add years to the life of the roof.

Additional J-M Bonded Roofs

In addition to asbestos roofs, Johns-Manville also supplies Combination Roofs, composed of a rag base felt and asbestos finishing felts, and a complete line of slag or gravel-surfaced roofs, using tar-saturated asbestos felts, tar saturated rag felts, or asphalt-saturated rag felts. These types of J-M Bonded Roofs are also included in the tables on pages 12 and 13.

Approved Roofing Contractors... Inspection... Bonds... Endorsements

As the best results are obtained only when the proper roofing is correctly laid, Johns-Manville has appointed Approved Roofing Contractors throughout the country, basing these appointments on experience, integrity and financial responsibility.

J-M Inspections are Available

Johns-Manville maintains a corps of inspectors whose services are available in connection with bonded built-up roofs. This service is required in connection with every roof which is to be bonded and is rendered before, during and after application.

Covered by Bond of National Surety Corp.

All Johns-Manville Built-up Roofs, except on the Pacific Coast, will when desired, be covered by a bond of National Surety Corp., guaranteeing the performance of the particular roof for a period of from ten to twenty years, depending on the type of roof applied. This bond is issued only on roofs laid by Johns-Manville Approved Roofing Contractors and in connection with Johns-Manville inspection service.

A Ten-Year Flashing Endorsement

Where Johns-Manville Flashing Materials are used in conjunction with Johns-Manville Roofing, a ten-year flashing endorsement will be attached to and become part of the bond, under the same conditions imposed for the bonding of the roof-



A Johns-Manville Smooth-Surfaced Asbestos Roof

Gives the Best Assurance of Roof Permanence

Since the primary purpose of a roof is permanent protection from the elements, it is obvious that a good roof must not only shed water, it must *stay* waterproof. And, for permanence, it must also be proof against fire and decay.

THE IMPORTANCE OF THE TYPE OF ASPHALT USED FOR ROOFS

Scientific research has found no waterproofing agent better than asphalt, which has been proved to be less brittle at low temperatures and less fluid at high temperatures than any other known waterproofing material. Yet there are many kinds and grades of asphalt. In the effort to secure the permanance requisite in a good roofing asphalt, J-M research engineers have developed a processed asphalt known as J-M Bonded Roofing Asphalt, which has shown marked superiority over all other asphalts ordinarily used for such purposes.

TESTS ON J-M BONDED ROOFING ASPHALT

In a series of accelerated tests by machine weathering, the J-M Laboratories subjected samples of Bonded Roofing Asphalt and other commercial asphalts to alternating cycles of exposure to heat, rain and sub-zero temperature, equivalent to ten years of actual service. Although the samples were practically identical in appearance before testing, the illustration at the upper right shows how Bonded Asphalt stood up when the others failed. It is this unusual permanence which led to the adoption of J-M Bonded Roofing Asphalt as the water-proofing agent in J-M Bonded Built-up Roofs.

However, even the best asphalt cannot, alone, make a good roof. There must be a flexible reinforcement, durable and non-combustible, which can itself be impregnated with asphalt to keep it waterproof, and which at the same time will protect the asphalt from its one cause of deterioration — the drying-out action of the sun. Asbestos felt meets these requirements exactly.



After water spray, are light and refrigeration, representing rain, heat and cold, were played on these three samples of roofing asphalt for the equivalent of 10 years of actual weathering, J-M Bonded Roofing Asphalt (right) was still apparently good as new

ASBESTOS USED IN J-M ASBESTOS FELTS

Centuries ago it was found that asbestos fibres could be woven into a fireproof cloth, but only during the past 60 years has it become commercially useful. Today this basic material is used in brake lining for automobiles and trucks because it is the only fibrous material that will not burn or disintegrate under high temperatures. It is used in woven form in asbestos

theater curtains, fire fighting suits, gloves, etc.

In combination with portland cement it is made into rigid asbestos roofing, siding and shingles, corrugated transite for roofing and siding, pipe and underground conduit, electrical barriers, etc. As used in built-up roofing, the asbestos fibres are first felted and then impregnated with asphalt, making a flexible stone roofing material, imperishable and fireproof.



ASBESTOS

Asbestos-fibres of stone-fireproof, rot-proof, enduring-the base of a good built-up roof. Crude asbestos fibres are here shown still attached to the serpentine rock matrix.

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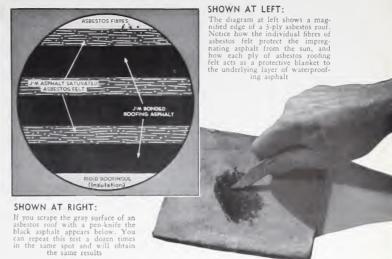
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How the Waterproofing Asphalt is Preserved by Asbestos Felt

The characteristic difference between asbestos fibre and all other natural fibres is that asbestos fibre is a solid filament, not a hollow tube. There can be no capillary action through it. This makes asbestos felt highly difficult to impregnate, since the waterproofing must be forced between and around the fibres, coating them and filling all the interstices, rather than their soaking it up with the blotterlike effect of organic fibres.

But this very lack of capillary action and consequent resistance to impregnation is the source of the protection which asbestos felt affords the vital waterproofing asphalt, once the felt is impregnated with it. The essential oils of the asphalt are protected from evaporation due to the continuous drying-out action of the sun, which so rapidly deteriorates other types of roofing, and the asbestos built-up roof stays waterproof. The accompanying diagram of the security afforded by asbestos felt is self-explanatory.

When the asbestos felt has been impregnated with J-M Bonded Roofing Asphalt, and Bonded Roofing Asphalt used as the cementing layer between the plies of felt forming the Built-up roof, the asphalt is preserved in practically its original condition. The result is a smooth-surfaced roof that *stays* waterproof for years, with minimum upkeep.



PROOF AGAINST FIRE AND DECAY

But asbestos does more than merely protect from weather. Asbestos is fire-proof and rot-proof and thus adds the other two essentials to roof permanence. Its very existence—in the oldest igneous rocks—proves its endurance against the destructive forces of fire, time and the elements.

Asbestos felt is virtually felted fibres of stone. It cannot decay; it will not burn. Exhaustive tests by the Underwriters' Laboratories, which included exposure to radiant heat, burning brands and direct flame, have proved that asbestos felt, even when impregnated and coated with asphalt as used in a J-M Built-Up Roof, will not support combustion. J-M Asbestos Roofs are so fire-resistant that, in every type, there will be found roofs that carry the Underwriters' Class A rating, which takes the base rate of insurance.

How Asbestos Felt Resists Fire

You can make this experiment in your own office with a J-M Roofing "Sandwich." This consists of pieces of J-M Asbestos Felts and rag felts stapled between sheets of a highly inflammable material. Lay the "sandwich" on a fireproof surface and light it. Instantly it bursts into flame. In a few seconds it goes out—yet in that time the organic rag felt is reduced to ashes, while the enduring mineral J-M Asbestos Felt remains, slightly sooty perhaps, but unharmed. A "sandwich" for this test will be promptly sent on request.

. SEE FOR YOURSELF
. MAKE THIS EASY TEST
. RIGHT IN YOUR OWN OFFICE



9 Advantages of a J-M Smooth Surfaced Asbestos Roof

1 PROVEN BY TEST OF TIME

The lasting qualities of a Johns-Manville Smooth Surfaced Asbestos Roof are clearly demonstrated on pages 8 and 9 in which are listed actual installations of this type of roof which have withstood the elements for 20 years or more.

2 CAN BE APPLIED TO EVERY ROOF WHICH WILL DRAIN WATER

We do not recommend the use of dead level roof decks. Roof decks should be graded to proper drains to prevent possibility of areas which will not drain. Undrained spots become unhealthy and breeding grounds for mosquitoes as well as creating unequal exposures of different parts of the roof surface to the elements. This creates the likelihood of unequal strains developing in the surface due to difference of exposure.

3 NO PROTECTIVE COVERING IS NEEDED; MATERIALS PROTECTED FROM SUN

Asbestos Roofing Felts do not require the use of slag or gravel for the protection of the asphalt and the felts. The asbestos in the felt prevents the sun from causing the deterioration or drying out of the asphalt in and between the felts.

4 HIGHLY FIRE-RESISTANT

The J-M 20-Year Smooth Surfaced Asbestos Roof is given a Class A rating, and the similar J-M 15-Year Roof a Class B rating, by the National Board of Fire Underwriters.

5 DECAY-PROOF

Asbestos felts, being made from rock fibre and asphalt, will not decay. The roof built up from these felts and asphalts will withstand the heat and cold and constant action of the elements under all kinds of conditions.

6 LEAKS EASILY LOCATED

An unforeseen accident or unusual expansion and contraction of the roof deck may damage any roof surface and cause it to leak. With a J-M Smooth-Surfaced Asbestos Roof, any such damaged areas can be quickly located.

7 EASY TO REPAIR

The construction of Smooth Surfaced Asbestos Roofs is such that repairs can be made quickly and inexpensively.

8 NO EXCESSIVE WEIGHT

The smooth surfaced asbestos felt roof finish does not require the protection of slag or gravel, therefore saving in the construction necessary to support the weight of such materials.

9 FIRST COST IS LAST COST FOR J-M WATERPROOFING MATERIALS

Nothing is added to the roof construction which is not a waterproofing in itself.



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The Critical Part of a Roof is the Flashing . .

FLASHING IS WHERE LEAKS ARE MOST LIKELY TO OCCUR

More than at any other place on a roof, a leak is apt to occur at the junction formed by the roof deck and a vertical surface such as a parapet wall, skylight curb or wall of an adjacent building, etc. Most roof decks are separate units from these vertical surfaces and oftentimes are constructed of different materials. There is a natural weakness at the angle due to shrinkage of the material, expansion or contraction, or other movement of the building.

In addition to this it must be remembered that a parapet wall stands up above the roof where driving rain beats against it from both sides as well as the top. Consequently, the wall absorbs a certain amount of moisture. For this reason it is most desirable that the flashing should go all the way through the wall. This method isolates the roof deek and keeps water from seeping down through the wall and under the roofing.

THE ROOF AND THE FLASHING SHOULD BE TWO DISTINCT OPERATIONS

Johns Manville has designed several types of flashing so that any of the different conditions encountered on a root can be handled successfully. In designing these flashings we have definitely made the roofing and the flashing two separate operations. The laying of the roofing felts should be completed before applying the flashing. Before any work is done a "cantistrip" or "V" shaped piece of lumber or other nailing base is installed at the angle formed by the roof and the vertical surface, so that instead of a sharp angle there is formed a gradual slope.

J-M FLASHING BECOMES A PART OF THE WALL

Johns Manville asbestos flashing telts are made up of the same basic materials as the asbestos roofing telts. The waterproofing or cementing agent is Johns Manville Ready Mixed Asbestole, a heavy bodied plastic rement composed of asbestos fibres, asphalt and other mineral ingredients, which hardens and becomes a part of the wall itself.

"THROUGH-THE-WALL" FLASHING PROVIDES GREATER PROTECTION THAN ANY OTHER KIND

A Johns-Manville Asbestos Flashing Feb in first applied to the wall with asphalt and turned out over the finished root to form the hate flashing. This felt must be nailed to the wall. The edge of the flashing felt on the soul is then reinforced with felt strips. The rap flashing is then misalled. This consists of running one asbestos felt and one ply of tanaraned fabric from a point one toch back from the moon tace of the wall, through the wall, over a key, and then extending down the wall, lapping the top of the base felt, all applied with Asbestile. This forms a complete seal for the root structure.



More leaks occur at the flashing than at any other part of a root. THROUGH THE WALL FLASHING to the salest known outbod of providing a permanently weather-ought job at this vulnerable point.

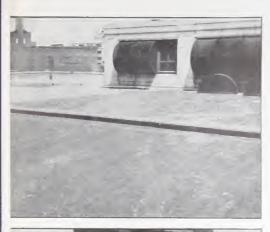
VARIATIONS OF "THROUGH-THE-WALL"

Naturally, there must be virusions of this "dirough the walf" method of flashing in order to take care of different methods of construction and different materials. In the case of a construct wall where it is impossible to go through the wall study, the cap flashing is carried up over the concerne walf and under the coping. In cases where metal cap flashing is used the Johns-Marville base flashing is moralled as described above and the motal cap flashing should go through the wall for adequate protection.

IMPORTANCE OF FLASHING EMPHASIZES NEED FOR COMPETENT APPLICATION

It is obvious that inferior or short-out methods of flatting will weaken the entire roof from a waterproving standpoint. This is another reason why such care is taken in selecting Johns-Manville Approved Roofing Contractors. They will apply the flattings in accordance with Johns-Manville reconmendations, assuring leakers of, freeproof roofs at every point.

Detailed specifications and drawings on the Johns-Manville System of Flashing will be found on pages 55 to 55.



A 25 YEAR OLD AT KANSAS CITY, MO.

In 1912 this J-M rouf was applied on the building of the Kansas City Star. Says the owner, "Certain portions are subjected to foot traffic but it has given excellent service with practically no cost for repairs or maintenance."

A 24 YEAR OLD AT

CHICAGO, ILL.

This J-M asbestos roof was laid in 1913 for Reid, Murdock & Company, 325 No. LaSalle St. The roof has given very satisfactory service. The performance of Johns-Manville Smooth-surfaced Asbestos Built-up Roofs is a record of which to be proud. Here are photographs which were taken in 1935 of a few of such roofs . . . every one of which has had a service life of 20 years or longer . . . and all are still in good condition.

Note the pleasing gray appearance of the roofs. As has been explained on page 5, this gray surface is the top-most layer of the asbestos fibres in the asbestos felt which blankets the vital waterproofing asphalt and protects it from the deteriorating action of the sun.

In addition to the roofs illustrated, among the many other Johns-Manville roofs with service records of 20 years or more, are the following typical examples:

A 36 YEAR OLD At Newark, N. J.

Building No. 4 of General Leather Company. Says Chief Engineer Krill, "During that entire period it has not required any maintenance whatever."

THREE 25 YEAR OLDS At Seattle, Wash.

J-M Smooth-surfaced Asbestos Roof was applied for the O.W.R.R. & N. Co., Argo Machine Shop, in September, 1912. Still in splendid condition.

At Detroit, Mich.

Detroit Baseball Company reports, "Your asbestos roofs were installed in 1912 on right and left field pavilions at Navin Park. They have withstood weather and the added punishment of thousands of baseballs striking them. The material appears in good condition."

At Louisville, Ky.

American Medicinal Spirits Company writes, "The performance more than speaks for itself."

BELOW . . . A 20 YEAR OLD AT WATERTOWN, N. Y.

Bagley and Sewall Company report that their J-M smooth-surfaced asbestos roofs appear to be in condition to last many years longer.





A 25 YEAR OLD AT SOUTH BEND, IND.

This J-M smooth surfaced asbestos read has been protecting the Oliver Farm Equipment Company factory for a full quarter of a century.



FOUR 24 At Seattle

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On March 4,

Hauser Packing (

'Nearly a qua Company of their

20 Years Old, Still in Their Prime

FOUR 24 YEAR OLDS At Seattle, Wash.

The roof of the Bell Street Dock, Port of Seattle, is still in good condition, although it was applied as long ago as 1913.

At Bluefield, W. Va.

Huff, Andrews and Thomas Company writes about their J-M roof, "Except for some shovel cuts caused by the removal of snow last winter, it is in excellent condition. . . . Overhead expense has been reduced to a minimum. . . . Anticipate many more years of service on this roof."

At Chicago, III.

Sears, Roebuck & Co. (Grocery Building) report two 24-year old J-M asbestos roofs "in good condition."

At Los Angeles, Cal.

Agent for Brockman Building reports "repairs to J-M roofs have probably not exceeded \$10 during all this time." Root applied in 1913.

TWO 23 YEAR OLDS At Seattle, Wash.

The world war had just started when a J-M roof was applied on the Lincoln High School in Seattle. The asbestos felts are in splendid shape today.

At Los Angeles, Cal.

New Method Laundry states their J-M roof "has given continuous service and is still in excellent condition.

IN CIRCLE - A 21 YEAR OLD AT LOS ANGELES, CAL.

On March 4, 1915, this J M roof was laid on the warehouse of the Hauser Packing Company. "Good for many more years of service"

BELOW - A 24 YEAR OLD AT CINCINNATI, OHIO

"Nearly a quarter of a century," says the American Valve and Meter Company of their J M smooth surfaced asbests a reef.

A 27 YEAR OLD AT BEACH GROVE,

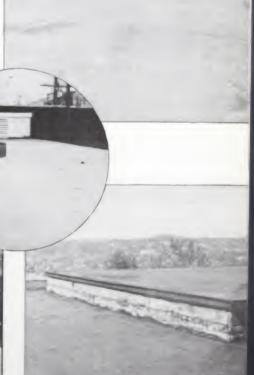
IND.

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A 24 YEAR OLD AT DETROIT, MICH.

In 1913 J.M. allower for was laid to the Interprete Founds Company And on the Interprete Time of Links and Inc.



A 20 YEAR OLD AT SEATTLE, WASH.

Many Mill Comment of Washington a pro-mal in the LM or a series of the col-le good making after 20 years.

6 Good Reasons for a Johns-Manville



APPLYING RIGID

Applying J-M Rigid Roofinsul in three 1/2" layers. Roof insulation not only saves fuel and assures comfortable interior temperatures, but also protects both the roof deck and the built-up roof itself

Johns-Manville Rigid Roofinsul

Light in Weight — High in Insulating Value

J-M Rigid Roofinsul was designed especially for use as insulation over roof decks, principally under J-M Bonded Asbestos Built-up Roofs. It is light in weight and has a high insulating value, and is also rigid and structurally strong. J-M Rigid Roofinsul has a high resistance to moisture absorption. It lasts for years in the open and, when covered with a J-M Bonded Asbestos Roof, will last as long as the roof itself.

Any desired number of layers of J-M Rigid Roofinsul can

EFFICIENT, STRONG J.M RIGID ROOFINSUL

Especially designed for insulating roofs of industrial, commercial and institutional buildings.



be installed to give any needed insulating efficiency, without adding appreciably to the weight of the roof.

J-M Rigid Roofinsul is furnished $24'' \times 48''$. The standard thickness is 1/2''. If sheets of greater thickness than 1/2'' are desired, two or more sheets are stapled together with a 3/4'' ship-lap joint on all four edges. Weight approximately 0.8 lb. per sq. ft., 1/2'' thick.

FOR INSULATED AND UNINSULATED ROOFS

Type of Roof	Thickness of J.M Rigid Romansul	Heat Loss in B t.u. per sq. ft., per deg. F. temperature difference per hour
%" wood deck and amooth-surfaced built-up roof	None 1/2" 1" 11/2" 2"	.533 .296 .205 .157 .127
15%" wood deck and mouth-surfaced built-up mof	None 1/2" 1" 11/2" 2"	.381 .242 .178 .140 .116
4" (uncrete and smooth-surfaced built-up roof	None 1/2" 1" 11'2" 2"	.676 .336 .223 .167 .134
5" consiste and smooth-surfaced huilt-up soof	None 1/2" 1" 11/2" 2"	.625 .323 .217 .164

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THREE Prevents Deck Mov

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J-M Rigid Roo have prevented

Rigid Roofinsul • Insulated Roof

ONE

Prevents Condensation and Roof Drip

J-M Rigid Roofinsul prevents condensation on the under side of the deck and eliminates discoloration of ceilings and the annoyance and damage caused by roof drip.

Regardless of how carefully a wood deck may be constructed, vapors penetrate the planking, condense on the underside of the built-up roof and rot starts at the top, unseen, and works down. While the problem of rot can be eliminated by the use of concrete, that of condensation and roof-drip remains.

When air comes in contact with a cooler surface, such as the underside of a roof, its temperature is lowered. If the temperature of the surface is below the dew point of the water vapor in the air, the excess moisture is deposited on the surface as condensation. Insulation of the proper thickness will keep the temperature of the surface above the dew point and prevent the deposition of moisture.

TWO Protects Deck Against Rot and Corrosion

By preventing condensation, J-M Rigid Roofinsul protects the deck against rot and corrosion. When the deck is of concrete or other non-combustible material, it reduces the danger of cracking (commonly caused by sudden temperature changes) and thereby tends to prevent moisture from reaching the reinforcing steel members.

THREE

Prevents Damage to Roofing Felts Through Deck Movement

Rigid Roofinsul protects the roofing felts themselves. All

roof decks move to some extent under temperature changes. When this cycle of alternate expansion and contraction continues over a long period of time, any cracks in the deck may eventually be transmitted to the built-up roof unless there is an intervening layer of insulation. J-M Rigid Roofinsul not only minimizes movement of the deck by keeping its temperature more uniform, but also provides sufficient resiliency to take up strains due to any movement which does occur and prevent their transmission to the felts, thus prolonging the life of the roof.

FOUR

Provides Closer Interior Temperature Control

Roofinsul permits closer control over interior temperatures both in summer and winter, assuring more comfortable, uniform working conditions throughout the year. Uniform interior temperatures are also a vital necessity in the operation of many modern industrial processes.

FIVE

Improves Working Conditions

Insulation with Roofinsul effectively retards the passage of heat through the roofs, thus saving on fuel and air conditioning bills. See table on opposite page.

SIX

Lowers Heating and Air Conditioning Costs

On new construction, J-M Rigid Roofinsul makes it possible to reduce considerably the investment in heating and air conditioning equipment. And on either new or old buildings, it appreciably lowers operating costs on such equipment.



DECAY FROM MOISTURE CONDENSATION

Moisture condensation and the resultant decay made the removal of these old wood decks imperative. J-M Rigid Roofinsul would have prevented this expense

Index and Condensed Specifications on

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			10				ings		Fe	elts					T		1	1
Specification Number	Page No.	Pitch of Roof per Foot, in Inches	Bond, Years (See	Underwriters* Classification	Surface	Number of Plies and Kind of Felt	Number of Moppings Asphalt [A] or Pitch	Sheathing Paper	Asbestos	Rag	Asphalt	Pitch	Roof Coating	Gravel	Slag	Smooth Surface or Crushed Slate	Gravel Surface	0
						WOOD DECKS		_	<u> </u>	1	1	-	1	1	1 9,	1 00 0	10	(
						Smooth Surface						_	_					
100	14	1/4 to	9 20	A	Smooth	One 55-lb. Asphalt-Saturated Asbestos Felt Three 20-lb. Asphalt-Saturated Asbestos Felts	A-3		115		90	_	8		1_	213		
103	14	1/4 to	15	A	Smooth	One 55-lb. Asphalt-Saturated Asbestos Felt Two 20-lb. Asphalt-Saturated Asbestos Felt	A-2		95	_	60	_	8		-	-	-	
200	15	1/4 to !	15	-	Smooth	One No. 45 Asphalt-Saturated Rag Felt	A-2		40	50	60		8			163	-	-
202	15	1/4 to 9	10	_	Smooth	Two 20-lb. Asphalt-Saturated Asbestos Felts One No. 30 Asphalt-Saturated Rag Felt	A-2		40			_				158	-	
205	Δ	1/4 to 9	20	_	Smooth	Two 20-lb. Asphalt-Saturated Asbestos Felts One No. 45 Asphalt-Saturated Rag Felt	A-3		-	30	60	_	8	_		1411		
						Three 20-lb. Asphalt-Saturated Asbestos Felts Gravel or Slag Surface			60	50	90		8			208		-
300	16	1/4 to 2	20	A	Gravel or Slag	Five 15-lb. Asphalt-Saturated Rag Felts	A-4	1	1	81	145			/00		1	1	T
304	16	1/4 to 2	15	A	Gravel or Slag	Four 15-lb. Asphalt-Saturated Rag Felts	A-3							400	300		626	52
301	17	2 to 4	10	A *	Slag	Five 15-lb. Asphalt-Saturated Rag Felts	A-5				115			400	300	_	580	48
600	**17	1/4 to 2	20	A	Gravel or Slag§	One ply Rosin-Sized Paper (over wood only) Five 15-lb. Tar-Saturated Asbestos Felts	P-4	5		81	-	150		400	250		-	48
604	**18	½ to 2	15	A	Gravel or Slag	One ply Rosin-Sized Paper (over wood only)	P-3	5			-			400	300		636	53
01	**18	2 to 6	10	A*	Slag	Four 15-lb. Tar-Saturated Asbestos Felts One ply Rosin-Sized Paper (over wood only) Five 15-lb. Tar-Saturated Asbestos Felts	P-4	5		65 -		25		400	300	_	595	49
			, ,				A-1	,		81	45	60			250		-	441
02	\wedge	1 to 4	10	C	Crushed Slate	Crushed Slate Surface												
100		4 to 9	-			1 No 70 to Aspirate Saturated Statekote Felte	A-4		- 1	149 1	120 -	-	-1			269	-	1 —
100	/ \			C	Crushed Slate						_						-	
100	Δ	9 10 9	10	С	Crushed Slate	Two 50-lb. Asphalt-Saturated Rag Felts Two 50-lb. Asphalt-Saturated Slatekote Felts	A-2		_ 1	133	60 -			-		193	_	-
100		4 10 9	10	C		Two 50-lb. Asphalt-Saturated Rag Felts Two 50-lb. Asphalt-Saturated Slatekote Felts OD DECKS WITH RIGID	A-2	JLA		_	60 -	-1		-1		193	_	
	10				Wo	Two 50-lb. Asphalt-Saturated Rag Felts Two 50-lb. Asphalt-Saturated Slatekote Felts OD DECKS WITH RIGID Smooth Surface	_	JLA'		_	60 -	-1			_	193		<u> </u>
04	19	1/4 to 9	20	A	WO	Two 50-lb. Asphalt-Saturated Rag Felts OD DECKS WITH RIGID Smooth Surface Four 20-lb. Asphalt-Saturated Asbestos Felts	_	JLA		N	20 -		8 -		<u>-1</u>	193		
04	19				Wo	Three 20-lb. Asphalt-Saturated Rag Felts OD DECKS WITH RIGID Smooth Surface Four 20-lb. Asphalt-Saturated Asbestos Felts Three 20-lb. Asphalt-Saturated Asbestos Felts	INSL		TIC	N 1		-1	8 -				_	
04 06	19	1/4 to 9	20	A B	Smooth Smooth	OD DECKS WITH RIGID Smooth Surface Four 20-lb. Asphalt-Saturated Asbestos Felts Three 20-lb. Asphalt-Saturated Asbestos Felts Gravel or Slag Surface	INSU		TIC	N 1	20 -	-1				208		
04 06 06	19	1/4 to 9 1/4 to 9	20 15	A B	Smooth Smooth Gravel or Slag	OD DECKS WITH RIGID Smooth Surface Four 20-lb. Asphalt-Saturated Asbestos Felts Three 20-lb. Asphalt-Saturated Asbestos Felts Three 20-lb. Asphalt-Saturated Asbestos Felts Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts	INSU		TIC	N 1	20 -	75 -	8 -	100	300	208		540
04 06 06 06 08	19 **20 **21	1/4 to 9 1/4 to 9 1/4 to 2 1/4 to 2	20 20 15	A B	Smooth Smooth Gravel or Slag Gravel or Stag	OD DECKS WITH RIGID Smooth Surface Four 20-lb. Asphalt-Saturated Slatekote Felts Three 20-lb. Asphalt-Saturated Asbestos Felts Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts Three 15-lb. Tar-Saturated Asbestos Felts	A-4 A-3 P-5 P-4		80 -	N 1	20 -	75 -	8 -		300	208	640	540
04 06 06 06 08	19	1/4 to 9 1/4 to 9	20 15	A B	Smooth Smooth Gravel or Slag	Three 15-lb. Tar-Saturated Asbestos Felts	A-4 A-3 P-5		80 - 60 -) N	20 -	50 -	8 -	100		208		
04 06 06 08	19 **20 **21	1/4 to 9 1/4 to 9 1/4 to 2 1/4 to 2	20 20 15	A B	Smooth Smooth Gravel or Slag Gravel or Stag	Three 15-lb. Tar-Saturated Asbestos Felts	A-4 A-3 P-5 P-4 P-3 A-1		80 - 60 -) N	20 -	50 -	8 -	100	300	208		499
04 06 06 08 10	**20 **21 **21	1/4 to 9 1/4 to 9 1/4 to 2 1/4 to 2 2 to 6	20 15 10	A B A B A*	Smooth Smooth Gravel or Slag Gravel or Slag Slag	OD DECKS WITH RIGID Smooth Surface Four 20-lb. Asphalt-Saturated Slatekote Felts Three 20-lb. Asphalt-Saturated Asbestos Felts Three 20-lb. Asphalt-Saturated Asbestos Felts Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts Three 15-lb. Tar-Saturated Asbestos Felts PRE-CAST GYPSUM D Gravel or Slag Surface	A-4 A-3 P-5 P-4 P-3		80 - 60 -) N	20 -	50 -	8 -	100	300	208		499
04 06 606 608 10	**20 **21 **21	1/4 to 9 1/4 to 2 1/4 to 2 2 to 6	20 15 15 20 20 20	A B A B A*	Smooth Smooth Gravel or Slag Gravel or Slag Slag Gravel or Slag	OD DECKS WITH RIGID Smooth Surface Four 20-lb. Asphalt-Saturated Slatekote Felts Three 20-lb. Asphalt-Saturated Asbestos Felts Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts Three 15-lb. Tar-Saturated Asbestos Felts PRE-CAST GYPSUM D Gravel or Slag Surface Five 15-lb. Asphalt-Saturated Rag Felts	A-4 A-3 P-5 P-4 P-3 A-1		80 - 60 - 65 - 49 - 65 -) N	20 - 90 - 11 10 10 10 10 10 10 10	50 -	8 -	100	300	208		499
04 06 606 608 110	19 **20 **21 **21	1/4 to 9 1/4 to 9 1/4 to 2 1/4 to 2 2 to 6	20 15 10 20 15	A B A B A*	Smooth Smooth Gravel or Slag Gravel or Slag Slag Gravel or Slag Gravel or Slag	OD DECKS WITH RIGID Smooth Surface Four 20-lb. Asphalt-Saturated Slatekote Felts Three 20-lb. Asphalt-Saturated Asbestos Felts Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts Three 15-lb. Tar-Saturated Asbestos Felts PRE-CAST GYPSUM D Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts Four 15-lb. Asphalt-Saturated Rag Felts Four 15-lb. Asphalt-Saturated Rag Felts	A-4 A-3 P-5 P-4 P-3 A-1		80 - 66 - 65 - 65 - 8)N	20 - 190 - 1045 10	50 -	8 - 4 - 4	100	300	208	599	499
04 06 06 08 10 00 04 01	19 **20 **21 **21 **21	1/4 to 9 1/4 to 2 1/4 to 2 2 to 6 1/4 to 2 2 to 6	20 15 10 20 15 10 10 10 10 10 10 10 10 10 10 10 10 10	A B A A A A A	Smooth Smooth Gravel or Slag Gravel or Slag Slag Gravel or Slag Gravel or Slag Slag	OD DECKS WITH RIGID Smooth Surface Four 20-lb. Asphalt-Saturated Satekote Felts Three 20-lb. Asphalt-Saturated Asbestos Felts Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts Three 15-lb. Tar-Saturated Asbestos Felts PRE-CAST GYPSUM D Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts Four 15-lb. Asphalt-Saturated Asbestos Felts Four 15-lb. Asphalt-Saturated Rag Felts Four 15-lb. Asphalt-Saturated Rag Felts Four 15-lb. Asphalt-Saturated Rag Felts Five 15-lb. Asphalt-Saturated Rag Felts Five 15-lb. Asphalt-Saturated Rag Felts	A-4 A-3 P-5 P-4 P-3 A-1 ECK:		80 - 66 - 65 - 65 - 665)N 1 1 1 1 1 1 1 1 1	220 1° 10° 1	50 -	8 - 4 - 4	100 3	300	208	599	499 465 526
04 06 08 10 00 04 00 00 00	19 **20 **21 **21 16 16 17 **17	1/4 to 9 1/4 to 2 1/4 to 2 2 to 6 1/4 to 2 2 to 6 1/4 to 2 2 to 4 1/4 to 2	20 15 10 20 10 20 15 10 20 15 10 20 15 10 20 15 10 20 15 10 20 15 10 20 15	A B A B A* A A A A A A A A B A A A A B A A A B A A A B A A B A A B A A B A A B A A B A A B A A B A A B A A B A A B A A B A A B B A B A B B A B B A B B B A B	Smooth Smooth Gravel or Slag Gravel or Slag Slag Gravel or Slag Gravel or Slag Gravel or Slag Gravel or Slag	OD DECKS WITH RIGID Smooth Surface Four 20-lb. Asphalt-Saturated Satekote Felts Three 20-lb. Asphalt-Saturated Asbestos Felts Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts Three 15-lb. Tar-Saturated Asbestos Felts PRE-CAST GYPSUM D Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts Four 15-lb. Tar-Saturated Asbestos Felts Four 15-lb. Asphalt-Saturated Rag Felts Four 15-lb. Asphalt-Saturated Rag Felts Five 15-lb. Tar-Saturated Asbestos Felts	P-5 P-4 P-3 A-1 ECK:		80 - 60 - 65 - 65 - 8 8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	20 - 90 - 10 10 10 10 10 10 10 10	50 -	8 - 4 - 4 - 4 - 4 - 4	100 3	300 300 300 250	208	599 ———————————————————————————————————	499 465 526 480 481
04 06 606 608 608 600 04 00 00 00 00 04	19 **20 **21 **21 16 16 17 **17 **18	1/4 to 9 1/4 to 2 1/4 to 2 2 to 6 1/4 to 2 2 to 4 1/4 to 2 2/4 to 2	20 15 10 20 15 10 15 15 10 15 15 10 15 15 15 15 15 15 15 15 15 15 15 15 15	A B A A A A A A	Smooth Smooth Gravel or Slag Gravel or Slag Gravel or Slag Gravel or Slag Gravel or Slag Gravel or Slag Gravel or Slag	OD DECKS WITH RIGID Smooth Surface Four 20-lb. Asphalt-Saturated Satekote Felts Four 20-lb. Asphalt-Saturated Asbestos Felts Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts Three 15-lb. Tar-Saturated Asbestos Felts PRE-CAST GYPSUM D Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts Four 15-lb. Asphalt-Saturated Asbestos Felts Five 15-lb. Asphalt-Saturated Rag Felts Five 15-lb. Asphalt-Saturated Rag Felts Five 15-lb. Asphalt-Saturated Rag Felts Five 15-lb. Tar-Saturated Asbestos Felts Four 15-lb. Tar-Saturated Asbestos Felts	A-4 A-3 P-5 P-4 P-3 A-1 ECK: A-4 A-3 A-5		80 - 60 - 65 - 65 - 65 - 65 - 65 - 65 - 6	DN 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	20 - 90 - 10 10 - 10 10 - 15 - 15 - 15 - 15 - 15 - 15 - 15 - 15 - 16 - 17 - 18 -	0 -	8 - 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	100 3 100 3 100 3	300 250 300 300 250	208	599 	499 465 526 480 481 531
04 06 08 10 00 04 01 00 04	19 **20 **21 **21 16 16 17 **17	1/4 to 9 1/4 to 2 1/4 to 2 2 to 6 1/4 to 2 2 to 6 1/4 to 2 2 to 4 1/4 to 2	20 15 10 20 10 20 15 10 20 15 10 20 15 10 20 15 10 20 15 10 20 15 10 20 15	A B A A A A A A A A A A A A A A A A A A	Smooth Smooth Smooth Gravel or Slag Gravel or Slag	OD DECKS WITH RIGID Smooth Surface Four 20-lb. Asphalt-Saturated Slatekote Felts Four 20-lb. Asphalt-Saturated Asbestos Felts Three 20-lb. Asphalt-Saturated Asbestos Felts Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts Three 15-lb. Tar-Saturated Asbestos Felts PRE-CAST GYPSUM D Gravel or Slag Surface Five 15-lb. Asphalt-Saturated Rag Felts Four 15-lb. Asphalt-Saturated Rag Felts Five 15-lb. Asphalt-Saturated Rag Felts Five 15-lb. Tar-Saturated Rag Felts Five 15-lb. Tar-Saturated Rag Felts Five 15-lb. Tar-Saturated Asbestos Felts Four 15-lb. Tar-Saturated Asbestos Felts	A-4 A-3 P-5 P-4 P-3 A-1 A-4 A-3 P-7 A-1 P-3 A-5 P-4 P-3		80 - 60 - 65 - 65 - 65 - 665 -	1 14 14 15 15 11 15 15 15 15 15 15 15 15 15 15	20 - 90 - 10 10 10 10 10 10 10 10	60	8 - 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	100 3 000 3 000 3 000 3	300 250 300 300 250 300	208	599 ———————————————————————————————————	499 465 526 480 481 531 490
04 06 08 10 00 04 01 00 04	19 **20 **21 **21 16 16 17 **17 **18	1/4 to 9 1/4 to 2 1/4 to 2 2 to 6 1/4 to 2 2 to 4 1/4 to 2 2/4 to 2	20 15 10 20 15 10 15 15 10 15 15 10 15 15 15 15 15 15 15 15 15 15 15 15 15	A B A A A A A A A A A A A A A A A A A A	Smooth Smooth Smooth Gravel or Slag Gravel or Slag	OD DECKS WITH RIGID Smooth Surface Four 20-lb. Asphalt-Saturated Satekote Felts Three 20-lb. Asphalt-Saturated Asbestos Felts Three 20-lb. Asphalt-Saturated Asbestos Felts Gravel or Slag Surface Four 15-lb. Tar-Saturated Asbestos Felts Three 15-lb. Tar-Saturated Asbestos Felts PRE-CAST GYPSUM D Gravel or Slag Surface Five 15-lb. Asphalt-Saturated Rag Felts Four 15-lb. Asphalt-Saturated Rag Felts Five 15-lb. Asphalt-Saturated Rag Felts Five 15-lb. Asphalt-Saturated Rag Felts Five 15-lb. Tar-Saturated Asbestos Felts	A-4 A-3 P-5 P-4 P-3 A-1 A-4 A-3 A-5 P-4 P-3 A-1	5	80 - 665 - 6	1 14 14 15 15 11 14 15 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16	20 1° 10 10 10 10 10 10 12 12 15 6 6 6 6 6 6 6 6 6		8 - 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	100 3 000 3 000 3 000 3	300 250 300 300 250	208	599 	499 465 526 480 481 531
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A complete specification not included in this Catalog but will be furnished on request.

Class A Underwriters' Ratings on Pitches up to and including 3" per foot,
This specification adapted for use under Promenade Tile.

Note: No bonds issued on Pacific Coast

** Available also, employing "Rag" felt instead of "Asbestos" felt. See note appended to the specification on page number indicated.

Johns-Mo

Pitch of Roof per

609 **29 14to 2 611 **29 2 to 6

108 30 1/2 to 109 30 1/2 to 9

500 31 Over 501 32 Over

502 32 Over

33 Who 33 Whe 35 Who

35 Base Class A Underwrite to the control of the control of

Johns-Manville Bonded Built-up Roofs

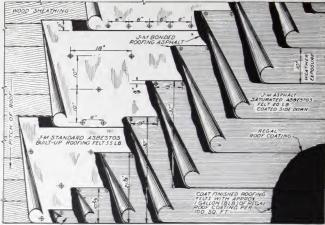
			te)				=		W eigh		of Materials, in Pounds per Square				Total Weigh per Square in Plunds			
Specification	Page No.	Pirch of Roof Few, in Inches and Kind of List of List of Monday Surface and Kind of Fest Surface		Number of Moppings Asphalt [A] or Puth	Sheathing Paper	Ashestos	अह अ	Asphalt	Patch	Roof Cuating	Gravel	Slag	Sm. ath Surface or Cru hed Slate	Gravel Surface	Slaw Surface			
				N	ON-COM	BUSTIBLE (except Pre-	ast (Зур	sur	n)	DE	СК	S					
						Smooth Surface												
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201	22	1/4 to 9	15	-	Smooth	On No 45 A shalt Saturated Ray Fult Two 10 lb Asphalt Saturated Advent Folia	A-3		40	10	90.	=	-	-	-	138		
203	23	1/4 to 9	10	-	Smooth	One No. 10 Applialt Saturated Rag Felt Two 20-lb Applialt Saturated Avenue Felti	A-3	-	\$10	334	460		N.	-		177.14	-	-
						Gravel or Slag Surface	0											
302	24	1/4 to 2	10	Α	Gravel up Slag	Four 17-16. Aspiral turnsted Ray Felis	A-5	Е		(MC)	0.55			400	100	1	(GIII)	110
305	25	1/4 to 2	15	Α	Grand or Slag	Thus 13 iii. Aphali tanaimi Ray Telte	A-4			49	145			(00	100	-	5304	411
303	25	2 to 1	10	A *	Stag	From (11th: Apphalt-Esturated Rag Felm	A-1			111	yes							118
613	⊭¥27	Less 14	20	Α	Gra-il or Slag	Four IS Ib. Tar Saturated Adventure Filter	P=1	Ħ	-6			1.10		000	(000)		0.00	31
602	¹⁰ 1126	1 4 to †	20	A	Grand or Stag	Four YV-lie, Tur Saturated Adventus Filts	Pot		- 15			111		0.00	tiao		+100	
605	11×26	V _i to 2†	1	Α	Gravel in Slag	Three 15 fb. Tax-Subineed Asbetto Filts	P-1		101			150		Terri	Kess		100	10
603	10127	2 to 61	10	A.	Stag	Func 13-th: Use Summated Administ Felts	A.)		18		-35	52			258			12
						Smooth Surface												
	23	M ₄ to M		-	Smooth	For 20-B. Asphali-Sumpled Adverse Fells Three 20-D. Asphali-Summer Adverse Fells			No.		100					(59k		
105	23	his to it		-	Smooth	Traje 70.10. Aphidi-faturani Adede Esti	3.1		lig				1			714		
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607	2í	ha to s	26	Λ	Smooth Cravil or Min	Gravel or Slag Surfa	3.1		lig		100	LAN.		-per		714	620	
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607 609	21 ***28 ***29	hato i	26 15	A	Smooth Grand or Mag Grand or Stag Mag	Gravel or Slag Surfa From 11-th. La Saturated Attention Falls There 11-th. La Saturated Attention Falls There 11-th. La Saturated Attention Falls From 11-th. La Saturated Attention Falls EEL DECKS WITH RIGID	P-1	LA	10 10 10		100	1 Sec		Min	loss			Ay
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JOHNS-MANVILLE

20 YEAR BUILT-UP ROOF

SMOOTH SURFACED— ASPHALT— ASBESTOS FELTS

INCLINES 1/4 IN. TO 9 INS. PER FT. SPECIFICATION NO. 100



SHOWN AND TURNED DOWN OVER FASCIA

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT: 1 layer of J-M Standard Asbestos Built-up Roofing Felt.	55 11
FINISHING FELTS: 3 layers of J-M Asphalt-Saturated Asbestos	
Roofing Felt 20-lb	60 11
ASPHALT: J-M Bonded Roofing Asphalt	90 ll
ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.)	1 ga

ROOF DECK

- (a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.
- (b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—If the pitch of the roof is 3" to the foot or less, the 55-lb. asbestos felt may be laid either paralleling, or at right angles to, the pitch. The 20-lb. asbestos felts shall be laid at right angles to the pitch. If the pitch of the roof is over 3" to the foot, all felts shall be laid to parallel the pitch. All felts shall be turned up 2" on all

vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—Lay one thickness of the 55-lb. asbestos felt, lapping the sheets 2", sealing the laps with the asphalt and nailing at 6" centers through the laps and at 18" centers through the longitudinal center of each sheet, in two lines spaced 10" apart, the nails to be staggered.

Over the 55-lb. asbestos felt, lay three plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 22" over the preceding one, mopping the full width under each with the asphalt and nailing at 9" centers adjacent to the back edge.

Coat the entire surface with the roof coating.

Flashing—(Copy from J-M Standard Specification for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

15 YEAR BUILT-UP ROOF SMOOTH SURFACED • ASPHALT • ASBESTOS FELTS INCLINES 1/4 IN. TO 9 INS. PER FT.______SPECIFICATION NO. 103

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT: J-M Standard Asbestos Built-up Roofing Felt	55 lb
FINISHING FELTS: J-M Asphalt-Saturated Asbestos Roofing Felt	
20-lb.	40 lb.
ASPHALT: J-M Bonded Roofing Asphalt	60 lb.
ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.)	1 gal.

ROOF DECK

- (a) Roof construction, including cants, covers or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.
- (b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—If the pitch of the roof is 3" to the foot or less, the 55-lb. asbestos felt may be laid either paralleling, or at right angles to, the pitch. The 20-lb. asbestos felts shall be laid at right angles to the pitch. If the pitch of the roof is over 3" to the foot, all felts shall be laid to parallel the pitch. All felts shall be turned up 2" on all

vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—Lay one thickness of the 55-lb. asbestos felt, lapping the sheets 2", sealing the laps with the asphalt and nailing at 6" centers through the laps and at 18" centers through the longitudinal center of each sheet, in two lines spaced 10" apart, the nails to be staggered.

Over the 55-lb. asbestos felt, lay two plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 17" over the preceding one, mopping the full width under each with the asphalt and nailing at 9" centers adjacent to the back edge.

Coat the entire surface with the roof coating.

Flashing—(Copy from J.M Standard Specification for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Fifteen-Year Guaranty Bond.

LINES .

BILL (
BASE FELT: 1 la
108 sq. ft.). .
FINISHING FEI
Roofing Felt 21
ASPHALT: J-M I

(a) Roof con properly graded smooth, clean, s the roofing. (b) Nailing: bedded in the w

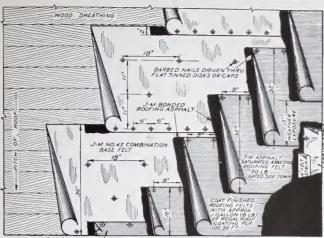
General—If the rag felt may be last the 20-lb, asbest of the pitch of the control of the control

SMOOTH

BILL (
BASE FELT: 1 12
Felt)
FINISHING FEL
Roofing Felt 20
ASPHALT: J-M B
ROOF COATING

(a) Roof cons properly graded smooth, clean, so the roofing. (b) Nailing s bedded in the w

General—If et 33½-lb. rag felt the pitch. The 20



EDGING TO BE CARRIED OUT ON ROOF AS

JOHNS-MANVILLE 15 YEAR BUILT-UP ROOF

SMOOTH SURFACED— ASPHALT— ASBESTOS AND RAG FELTS

INCLINES 1/4 IN. TO 9 INS. PER FT.

SPECIFICATION NO. 200

BILL OF MATERIALS PER 100 SQ. FT.

50 lb.
40 lb.
50 lb.
1 gal.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—If the pitch of the roof is 3" to the foot or less, the 45-lb. rag felt may be laid either paralleling, or at right angles to the pitch. The 20-lb. asbestos felts shall be laid at right angles to the pitch. If the pitch of the roof is over 3" to the foot, all felts shall be laid

to parallel the pitch. All felts shall be turned up 2" on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks,

Roofing—Lay one thickness of the 50-lb. rag felt, lapping the sheets 2", sealing the laps with the asphalt and nailing at 6" centers through the laps and at 18" centers through the longitudinal center of each sheet in two lines spaced 11" apart, the nails to be staggered. Over the 50-lb. rag felt, lay two plies of the 20-lb. asbestos felt,

Over the 50-lb. rag felt, lay two plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 17" over the preceding one, mopping the full width under each with the asphalt and nailing at 9" centers adjacent to the back edge.

Coat the entire surface with the roof coating.

Flashing—(Copy from J-M Standard Specification for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Fifteen-Year Guaranty Bond.

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT: 1 layer of J-M No. 30 Combination Base Felt (Rag	
Felt)	33½ lb.
FINISHING FELTS: 2 layers of J-M Asphalt-Saturated Asbestos	
Roofing Felt 20-lb	40 lb.
ASPHALT: J-M Bonded Roofing Asphalt	60 lb.
POOF COATING. LM Regal Roof Coating (Black) (8 lb per gal)	1 0 1

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—If the pitch of the roof is 3" to the foot or less, the 33½-lb. rag felt may be laid either paralleling, or at right angles to, the pitch. The 20-lb. asbestos felts shall be laid at right angles to the

pitch. If the pitch of the roof is over 3" to the foot, all felts shall be laid to parallel the pitch. All felts shall be turned up 2" on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—Lay one thickness of the 33½-lb. rag felt, lapping the sheets 2", sealing the laps with the asphalt and nailing at 6" centers through the laps and at 18" centers through the longitudinal center of each sheet in two lines spaced 11" apart, the nails to be staggered.

Over the 33½-lb. rag felt, lay two plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 17" over the preceding one, mopping the full width under each with the asphalt and nailing at 9" centers adjacent to the back edge.

Coat the entire surface with the roof coating.

Flashing—(Copy from J-M Standard Specification for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Ten-Year Guaranty Bond.

OVER WOOD OR PRE-CAST GYPSUM DECKS

JOHNS-MANVILLE

20 YEAR BUILT-UP ROOF

SLAG OR
GRAVEL SURFACED—
ASPHALT—
RAG FELTS

INCLINES 1/4 IN. TO 2 INS. PER FT. SPECIFICATION NO. 300

BILL OF MATERIALS PER 100 SQ. FT.

FELTS: 7 Level of July Sensite.	Applications and Buy Foll 19 (II)		
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ASPHALT IMPORT	Audult:	ON	(ii)
SURFACING Engl		-	Time
no Wales			100

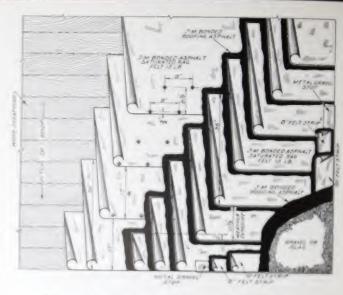
ROOF DICK

(a) fixed communities, including pasts, given by fillers alwel to properly gradied to getters and read drawn leaving all auditors where closes would not dry, or attinherest combines to become the pooling.

(b) Nating steps sight be farmated by others as required, embedded to the wall structure to which in source the factoring

INSTALLATION

General—Alt moding felts shall be moded up J* on all sentials suffices without connecting therein. All pulls shall be driven through that spent shalls.



Rooding—Las two pixes in the 194b, ray fest, tapping each short to over the averaging one and making through the laps in two trees spaced "to" apost the first line to adjoin the edge of the first the main in he spaced at 9" existent and staggered.

Over these help lay three additional place of the (5-lb, rag felt, lapping each sheet 24%, over the perceding one, morphing the full width scales such with the asphalt:

Over the sours surface pour a uniform costing of the asphalt and ordered electric, while for, are less than 400 flet of gravel or 100 lbs of stag for such 100 ap. ft. of root surface.

Thedring—(Coft from f. M. Standard Specification for Flathing, 1-92 (5).)

If I a fined it required, add for Interargy I

GUARANTEL

The work small be done by a product contractor approved by the manufactories. The product contractor shall furnish a folias-Manuelle Twenty Year Constanty Bond.

15 YEAR BUILT-UP ROOF SLAG OR GRAVEL SURFACED . ASPHALT . RAG FELTS INCLINES 1/4 IN. TO 2 INS. PER FT. ______ SPECIFICATION NO. 304

BILL OF MATERIALS PER 100 SQ. PT. PRITE : Long of 100 Book Report Repor

ROOF DICK

[41] Roof contraction, including cases, cover or filters shall be properly gualed to gotton and small shallow having all harders maked, cited maked and day, in adiabattery condition to causes the seeding.

(b) Nating steps shall be formuled by others as required nobehind in the well amounts, to which to record the facilities.

INSTALLATION

General—All scaling from shall be torsed up 2" on all natural natures without being removed theory. All tails shall be alread through the notal disks. Brooking—Lay two piles of the 15-lit, rag fait, lapping each sheet 19" mest the passeding one and resilting through the laps so two lines special \$15" against the first toot to advois the edge of the doct the could to be special at 5" centers and suggested.

One there has lay two additional place of the 15-lb, my list, appling each ideas 10" over the possessing one, inopping the full worth under each with the amplatic.

One the entire under pour a undoes studing of the sighal and embed thereon, while but our less than site the of panel or too the of stay for each 100 as ft. of roof sudges.

Flashing—(Col) from J-M Standard Specification for Flashing, page 11.)

(II) a friend in required, add the following ()

GUARANTEE

The week stail he done by a reading contractor approved by the standarders. The reading contractor shall furnish a Johns Marrish foreca Year Coursesty Bond. 10 YEA SLAG S INCLINI

BILL
FELTS: \(\) laver
\(\) \(\) \(\) lb. per
\(\) ASPHALT: \(\) \(\) SURFACING: \(\)

(a) Roof co properly grade each, clean, the tobig (b) Nailing bedded in the

General—All

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(c) Ford many problem of the control of the control

Carrie All I

10 YEAR BUILT-UP ROOF SLAG SURFACED • ASPHALT • RAG FELTS INCLINES 2 INS. TO 4 INS. PER FT._____

SPECIFICATION NO. 301

BILL OF MATERIALS PER 100 SO. FT.

FELTS: 5 layers of J-M Bonded Asphalt-Saturated Rag Felt 15 lb.	
(161/4 lb. per 108 sq. ft.)	81 lb
ASPHALT: J-M Bonded Roofing Asphalt	150 lb.
SURFACING: Slag	250 lb

ROOF DECK

- (a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.
- (b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All roofing felts shall be turned up 2" on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

SHEATHING PAPER

SHEATHING PAPER

SHEATHING PAPER

SHEATHING PAPER

AND FILTS AS ACCOUNTY OF THE PAPER AND FILTS ASSESTED ASSEST

BILL OF MATERIALS PER 100 SQ. FT.

LMETAL GRAVEL STOP

SHEATHING PAPER: (Used on wood deck only) 1 layer (5 lb. per	
100 sq. ft.)	5 lb.
FELTS: 5 layers of J.M 15-lb. Tar-Saturated Asbestos Felt (16) 4	
lb. per 108 sq. ft.),	81 lb.
PITCH: J.M Bonded Roofing Pitch	150 lb.
SURFACING: Gravel	400 lb.
or Slag	300 lb.

ROOF DECK

- (a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.
- (b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All roofing felts shall be turned up 2" on all vertical masonry surfaces and 4" on all vertical wood surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—Lay five plies of the 15-lb. rag felt, lapping each sheet 29 1/5" over the preceding one, mopping between plies with the asphalt to within 4" of the back edge of the underlying felt and nailing at 12" centers, 10" from the back edge.

Over the entire surface mop a uniform coating of the asphalt and embed therein, while hot, not less than 250 lbs. of slag for each 100 sq. ft. of roof surface.

Flashing—(Copy from J-M Standard Specification for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Ten-Year Guaranty Bond.

JOHNS-MANVILLE 20 YEAR BUILT-UP ROOF

SLAG OR GRAVEL SURFACED— PITCH (TAR)— ASBESTOS FELTS*

INCLINES 1/4 IN. TO 2 INS. PER FT. SPECIFICATION NO. 600*

*A built-up roof of this same construction is available differing only in the use of rag instead of a beaus felt. To specify, make following change:

SPECIFICATION NO. 700

FFLTS: (Change name of felt to "J-M Bonded Tar Saturated Rag Felt 15 lb.")

Roofing—If application is over wood sheathing, lay line thickness of sheathing paper, lapping the sheets not less than 1".

Lay two plies of the 15-lb, tar-saturated roofing felt, lapping each sheet 17" over the preceding one and nailing sufficiently to hold in place.

Over these felts lay three additional plies of the 15-lb tar laturated roofing felt, lapping each sheet 22" over the preceding one, mopping the full width under each with the pitch and nailing at 24" centers, 3" from the back edge.

Over the entire surface pour a uniform coating of the pitch and embed therein, while hot, not less than 400 lbs. of gravel or 300 lbs. of slag for each 100 sq. ft. of roof surface.

Flashing—(Copy from J-M Standard Specification for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

OVER WOOD OR PRE-CAST GYPSUM DECKS

JOHNS-MANVILLE 15 YEAR BUILT-UP ROOF

SLAG OR GRAVEL SURFACED-PITCH (TAR)-**ASBESTOS FELTS***

INCLINES 1/4 IN. TO 2 INS. PER FT. SPECIFICATION NO. 604*

*A built-up roof of this same construction is available, differing only in the use of "rag" instead of "asbestos" felt. To specify, make following changes:

SPECIFICATION NO. 704

FELTS: (Change name of felt to "J-M Bonded Tar Saturated Rag Felt 15 lb.")

BILL OF MATERIALS PER 100 SQ. FT.

SHEATHING PAPER: (Used on wood deck only) 1 la	yer (5 lb. per
100 sq. ft.)	
•FELTS: 4 layers of J-M 15-lb. Tar-Saturated Asbesto	s Felt (16½
lb. per 108 sq. ft.)	65 11
PITCH: J-M Bonded Roofing Pitch	125 1
SURFACING: Gravel	400 1
or Slag	

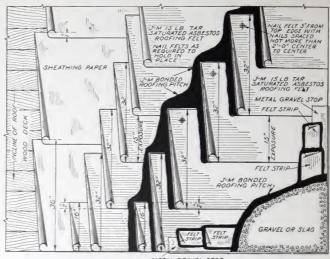
ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General-All roofing felts shall be turned up 2" on all vertical masonry surfaces and 4" on all vertical wood surfaces without being cemented thereto. All nails shall be driven through flat metal disks.



METAL GRAVEL STOP

Roofing-If application is over wood sheathing, lay one thickness of sheathing paper, lapping the sheets not less than 1"

Lay two plies of the 15-lb. tar-saturated roofing felt, lapping each sheet 17" over the preceding one and nailing sufficiently to

Over these felts lay two additional plies of the 15-lb, tar-saturated roofing felt, lapping each sheet 17" over the preceding one, mopping the full width under each with the pitch and nailing at 24" centers, 3" from the back edge.

Over the entire surface pour a uniform coating of the pitch and embed therein, while hot, not less than 400 lbs. of gravel or 300 lbs. of slag for each 100 sq. ft. of roof surface.

Flashing-(Copy from J-M Standard Specification for Flashing,

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Fifteen-Year Guaranty Bond.

10 YEAR BUILT-UP ROOF SLAG SURFACED . PITCH (TAR) . ASBESTOS FELTS* INCLINES 2 INS. TO 6 INS. PER FT ... SPECIFICATION NO. 601*

BILL OF MATERIALS PER 100 SQ. FT. SHEATHING PAPER: (Used on wood deck only) 1 layer (5 lb. per 100 sq. ft.) 5 1h. •FELTS: 5 lavers of J-M 15-lb. Tar-Saturated Asbestos Felt (1614 1b. per 108 sij. ft,). PITCH: J M Bonded Roofing Pitch (for mapping between felts) 60 lb ASPHALT: J.M Bunded Roofing Alphalt (for top surfacing) 45 lb SURFACING: Slag

ROOF DECK

(Copy from Specification No. 604 above.)

INSTALLATION

General - (Copy from Specification No. 604 above.) Roofing-If application is over wood sheathing, lay one thickness of sheathing paper, lapping the sheets not less than 1".

Lay five plies of the 15-lb. tar-saturated roofing felt, lapping each sheet 26" over the preceding one, mopping under each with the pitch to a width of 18" starting 2" from the exposed edge. Nail each sheet at 12" centers, 10" from the back edge.

Over the entire surface mop a uniform coating of the asphalt and embed therein, while hot, not less than 250 lbs. of slag for each 100 sq. ft. of roof surface.

Flashing (Copy from J-M Standard Specification for Flashing, page 33.)

GUARANTEE

(Same as for Specification No. 604 above, except change to "Ten-

*A built-up roof of this same construction is available, differing only in the use of "rag" instead of "asbestos" felt. To specify, make following changes:

SPECIFICATION NO. 701

FELTS: (Change name of felt to "J-M Bonded Tar Saturated Rag Felt 15 lb.")

BILL O FELTS: 4 layers of (coated one side

specified in specif ASPHALT: J-M Bo For mopping insul For mopping each ROOF COATING:

(a) Roof const properly graded i smooth, clean, sou roofing.

(b) Nailing str bedded in the wal

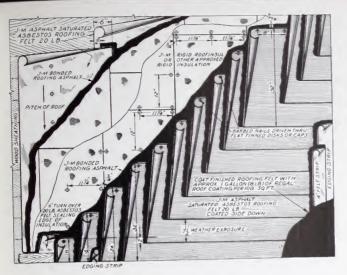
General-If the shall be laid at rig over 3" to the foo roof felts shall be cemented thereto. turned up a distant and shall overhang be driven through

15 YEAR HTOOMS INCLINES

BILL OF FELTS: 3 Layers of J An additional pl 0= No-500 for ASPHALT: J.M Box F r mopping insu For mopping each ROOF COATING:

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JOHNS-MANVILLE 20 YEAR BUILT-UP ROOF

SMOOTH SURFACED-ASPHALT-ASBESTOS FELTS-INSULATION

INCLINES 1/4 IN. TO 9 INS. PER FT. SPECIFICATION NO. 104

BILL OF MATERIALS PER 100 SQ. FT.

FELTS: 4 layers of J.M Asbestos Asphalt-Saturated Felt 20 lb. (coated one side) (An additional ply of 20-lb. asbestos felt is specified in specification No. 500 for application under the insu-80 lb. 120 lb. ASPHALT: J-M Bonded Roofing Asphalt.... 30 lb. For mopping insulation over felt..... 30 lb.

ROOF DECK

ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.)

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General-If the pitch of the roof is 3" to the foot or less, the felts shall be laid at right angles to the pitch. If the pitch of the roof is over 3" to the foot, the felts shall be laid to parallel the pitch. The roof felts shall be turned up 2" on all vertical surfaces without being cemented thereto. The felt applied under insulation shall be similarly turned up a distance 6" greater than the thickness of such insulation and shall overhang all roof edges a similar amount. All nails shall be driven through flat metal disks.

Insulation-(Copy from J-M Standard Specification No. 300, page 31.)

Roofing-Lay four plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 241/2" over the preceding one, mopping the full width under each with the asphalt and nailing at 9" centers adjacent to the back edge, or, if job conditions make it desirable to apply the roofing in two operations, lay two plies of the 20-lb. asbestos felt with the coated side down, lapping each sheet 17" over the preceding one, mopping the full width under each with the asphalt, nailing at 9" centers adjacent to the back edge, and over these felts, lay two additional plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 17" over the preceding one, mopping the full width under each with the asphalt and nailing at 9" centers adjacent to the back edge-except, on roof pitches under 3" to the foot, nailing may be omitted.

Coat the entire surface with roof coating.

Flashing-(Copy from J-M Standard Specification for Flashing,

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

15 YEAR BUILT-UP ROOF SMOOTH SURFACED . ASPHALT . ASBESTOS FELTS . INSULATION SPECIFICATION NO. 106 INCLINES 1/4 IN. TO 9 INS. PER FT._

BILL OF MATERIALS PER 100 SQ. FT. FELTS: 3 layers of J-M Asbestos Roofing Felt 20 lb. (coated one side) (An additional ply of 20-lb. asbestos felt is specified in Specifica-60 lb. tion No. 500 for application under the insulation)..... 90 lb. ASPHALT: J-M Bonded Roofing Asphalt.... 30 lb. For mopping insulation over felt..... 30 lb. For mopping each additional ply of insulation.... ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.)

ROOF DECK

(Copy from Specification No. 104 above.)

INSTALLATION

General—(Copy from Specification No. 104 above.)

Insulation—(Copy from J-M Standard Specification No. 500,

Roofing-Lay three plies of the 20-lb. asbestos felt, lapping each sheet 22" over the preceding one, mopping the full width under each with the asphalt and nailing at 9" centers adjacent to the back edge-except, on roof pitches under 3" to the foot, nailing may be omitted.

Coat the entire surface with the roof coating.

Flashing-(Copy from J-M Standard Specification for Flashing, page 33.)

GUARANTEE

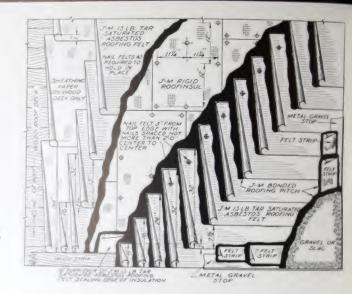
(Same as for Specification No. 104 above, except change to "Fifteen-Year".)

OVER INSU

JOHNS-MANVILLE 20 YEAR BUILT-UP ROOF

SLAG OR GRAVEL SURFACED-PITCH (TAR)-ASBESTOS FELTS*-INSULATION

INCLINES 1/4 IN. TO 2 INS. PER FT. SPECIFICATION NO. 606*



BILL OF MATERIALS PER 100 SQ. FI

SHEATHING PAPER; (Carl and Ford day could like the per 100 sq. 71.7 *FELTS: (Under Insulation) & Lawre of J.M. (C.H. Tar-Siturated Aslimbu Rosing Feb. (10% th. per 100 mg. ft./ *FELTS: (For Built-Up Roof) a layer of J.M. (bills Turbinson) Asterios Wooding Fair (Troy Dr. per 100 eq. 71.7 PITCH: (Under Invalation) I-M Dunled Dunley Pink 60.48 PITCH: (For Built Up Reef) J-M Blendid # miles Pitch) 1778 165 SURFACING CHAPL - mr 30 au

ROOF DECK

(a) Roof construction, including costs, cover or filters, shall be properly geaded to gatters and mod shallo, heaving all surface smooth clean sound, and day, in a satisfactory condition in regeive the rooling.

(b) Nating stays stall be formeded by others, as required and bedded to rise wall remoure, to which he seems the Rolling.

INSTALLATION

General - The fells applied under the insulation shall be broad up on fast not cemented to, all vertical multices to a largest 6" presimthan the thickness of the involution and shall overlang all coof edges a similar amount. All felrs applied over the anularing shall be turned up J" on all termini manney notices and a" on all werdeal wood surfaces without being exmented thereto. All made shall be driven through flat sortal disks.

Felts Under Insulation-II application is treet would shraming lay one thickness of absenting paper (weighing 5 lbs. per 100 up. fb.) lappurg the shorte not less than I.".

Lay two plots of the 15-lb turnstanted left, lapping such sheet 17" own the precising one and nathing authority to hold in place.

Invalation-Lay the Roofestal with the rough side down and with all end solets broken, mopping the full width under each three with the punh. The edges of the sheets at the justic shall be shoroughly sealed with the pitch. The insulation shall be inslated into areas upproximately to" 0" square by path-stoppings of our ply of the 15-lb. ter-secreted tooling felt, mapped the full width with the pincle as

satend and less than 4" over the edge of the insulation in place and out less than 4" under the adjoining insulation to be laid. Nail each theet of the insulation at 12" centers adjacent to the longitudinal oden and expected through the longitudinal center.

If to be applied in more than one layer, succeeding layers shall be applied in the same manner as the first layer (unless high humidity and to dea nime conditions do not exist, in which event the mopfree born have may be amitted), the sheets of each layer to brook numbs with those of the preceding layers and nailing done through the top layer.

The upruring felt at vertical surfaces and roof edges shall be mirror down and impreed solidly to the Roofinsul.

Invalation shall not be left exposed to the weather. No more inmilation shall be laid down than can be completely covered with the studing felts on the same day. At the end of the day's work, roofing felts shall be surred down over the exposed edges of the insulation and supped solidly.

Rooting - Lay from plies of the 15-lb tar-saturated roofing felt, Japping each chect My" over the preceding one mopping the full width under each with the pitch and nailing at 24" centers, 3" from the back edge.

Over the unities surface pour a uniform costing of the pitch and wither flurrein, while hot, not less than 400 ths, of gravel or 300 lbs. of alan for each 100 ag ft of roof surface.

Plading (Copy from J.M Standard Specification for Platforms, Mar Jan

(If a load is required, add the following)

GUARANTEE

The work shall be done by a rooting contractor approved by the manufacturer. The rooting contractor shall furnish a Johns-Mamille Twenty Vent Guaranty Bond.

"A hould-up soud of this same construction is available, different only in the one of "ray" instead of "sabeston" felt. To specify, make following charges:

SPECIFICATION NO. 706

FELTS: (Charge name of felt to "J-M Booded Tar Saturated Kag Felt 15 1h -)

SHEATHING PAPER yo 1 m sq. ft.) , FELTS: (Under Insul

Roong Felt FELTS. (For Built-Up A Roo ng Felt PITCH: (Under Insula PITCH: (For Built-Up SURFACING, Gravel

or Mag 10 u for Specia

General-(Same a July Under Insula Same (Same

10 YEAR BE SLAG SURF INCLINES 2

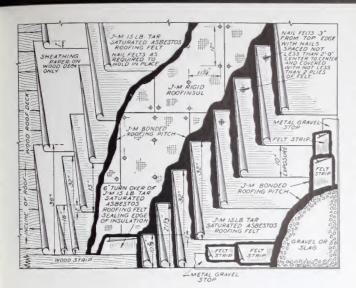
BILL OF SHEATHING PAPER PERSONAL PROPERTY. onigs Under lasul Rooting Felt off TS (For Built-Up Kool & Fels PITCH (Under Insula PITCH (For Mopping North Room ASPHALT: (For Top 5

Some Aspirals

WATERCONG WAS

Is a for Speci

General - I Same



JOHNS-MANVILLE 15 YEAR BUILT-UP ROOF

SLAG OR GRAVEL SURFACED-PITCH (TAR)-ASBESTOS FELTS*-INSULATION

INCLINES 1/4 IN. TO 2 INS. PER FT. SPECIFICATION NO. 608*

BILL OF MATERIALS PER 100 SO. FT.

DILL OF THE PROPERTY OF		
SHEATHING PAPER: (Used over wood deck only) 1 layer (5 lb.		
per 108 sq. ft.) 1.111	5	1b.
*FELTS: (Under Insulation) 2 layers of J-M 15-lb. Tar-Saturated		
Asbestos Roofing Felt (161/4 lb. per 108 sq. ft.)	321/2	Ib.
*FELTS: (For Built-Up Roof) 3 layers of J-M 15-lb. Tar-Saturated		
Asbestos Roofing Felt (161/4 lb. per 108 sq. ft.)	49	lb.
PITCH: (Under Insulation) J-M Bonded Roofing Pitch		lb.
PITCH: (For Built-Up Roof) J-M Bonded Roofing Pitch	150	
SURFACING: Gravel	400	lb.
or Slag.	300	lb.

ROOF DECK

(Same as for Specification No. 606 opposite.)

INSTALLATION

General—(Same as for Specification No. 606 opposite.) Felts Under Insulation—(Same as Specification No. 606 opposite.) Insulation—(Same as for Specification No. 606 opposite.)

Roofing—Lay three plies of the 15-lb. tar-saturated roofing felt, lapping each sheet 22" over the preceding one, mopping the full width under each with the pitch and nailing at 24" centers, 3" from the

Over the entire surface pour a uniform coating of the pitch and embed therein, while hot, not less than 400 lbs. of gravel or 300 lbs. of slag for each 100 sq. ft. of roof surface.

Flashing (Copy from J-M Standard Specification for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Fifteen-Year Guaranty Bond.

*A built-up roof of this same construction is available, differing only in the use of "rag" instead of "asbestos" felt. To specify, make following change SPECIFICATION NO. 708

FELTS: (Change name of felt to "J-M Bonded Tar Saturated Rag Felt 15 lb.")

10 YEAR BUILT-UP ROOF SLAG SURFACED . PITCH (TAR) . ASBESTOS FELTS* . INSULATION SPECIFICATION NO. 610* INCLINES 2 INS. TO 6 INS. PER FT ._

BILL OF MATERIALS PER 100 SQ. FT. SHEATHING PAPER: (Used over wood deck only) 1 layer (5 lb. 5 lb. per 108 sq. ft.) *FELTS: (Under Insulation) 2 layers of J-M 15-lb. Tar-Saturated •FELTS: (For Built-Up Roofs) 4 layers of J.M 15-lb. Tar-Saturated 65 lb. Asbestos Roofing Felt (161/4 lb. per 108 sq. ft.).... 30 lb. PITCH: (Under Insulation) J-M Bonded Roofing Pitch..... PITCH: (For Mopping in between Built-Up Roofing Felts) J-M Bonded Roofing Pitch ASPHALT: (For Top Surfacing Built-Up Roofing Felts) J-M Bonded Roofing Asphaltapprox. 250 lb. SURFACING: Slag

Felts Under Insulation (Same as for Specification No. 606

Insulation-(Same as for Specification No. 606 opposite.)

Roofing—Lay four plies of the 15-lb. tar-saturated felt, lapping each sheet 241/2" over the preceding one, mopping under each with the pitch to a width of 30" starting 2" from the exposed edge. Nail each sheet at 12" centers, 10" from the back edge.

Over the entire surface mop a uniform coating of the asphalt and embed therein, while hot, not less than 250 lbs. of slag for each 100 sq. ft. of roof surface.

Flashing-(Copy from J-M Standard Specification for Flashing, page 33.)

GUARANTEE

(Same as for Specification No. 606, except change to "Ten-Year".)

*A built-up roof of this same construction is available, differing only in the use of "rag" instead of "asbestos" felt. To specify, make following changes

SPECIFICATION NO. 710 FELTS: (Change name of felt to "J-M Bonded Tar Saturated Rag Felt 15 lb.")

ROOF DECK

(Same as for Specification No. 606 opposite.)

INSTALLATION

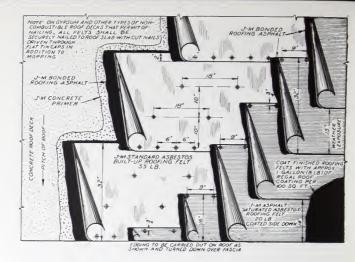
General—(Same as for Specification No. 606 opposite.)

JOHNS-MANVILLE

20 YEAR BUILT-UP ROOF

SMOOTH SURFACED— ASPHALT— ASBESTOS FELTS

INCLINES 1/4 IN. TO 9 INS. PER FT. SPECIFICATION NO. 101



BILL OF MATERIALS PER 100 SO. FT.

BASE FELT: 1 layer of J-M Standard Asbestos Built-Up Roofing Felt	55 lb.
FINISHING FELTS: 2 layers of J-M Asphalt-Saturated Asbestos	
Roofing Felt 20-lb	40 lb.
PRIMER: J-M Concrete Primer (8 lb. per gal.):	
Over Concrete	1 gal.
Орет Gypsиm1½ to	2 gal.
	90 lb.
ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.).	1 gal.

ROOF DECK

- (a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.
- (b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—If the pitch of the roof is 3" to the foot or less, the 55-lb. asbestos felt may be laid either paralleling, or at right angles to, the pitch. The 20-lb. asbestos felts shall be laid at right angles to the pitch. If the pitch of the roof is over 3" to the foot, all felts shall be laid to parallel the pitch. All felts shall be turned up 2" on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—Coat all surfaces which are to receive the roofing with the concrete primer and allow to dry.

Lay one thickness of the 55-lb. asbestos felt, lapping the sheets 2", mopping the full width under each with the asphalt and, if roof construction permits, nailing at 6" centers through the laps and at 18" centers through the longitudinal center of each sheet in two lines spaced 10" apart, the nails to be staggered.

Over the 55-lb. asbestos felt, lay two plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 17" over the preceding one, mopping the full width under each with the asphalt and, if roof construction permits, nailing at 9" centers adjacent to the back edge.

With nailing strips provided as required, nail each sheet of the 55-lb. asbestos felt at 6" centers at each nailing strip. Nail each sheet of the 20-lb. asbestos felt at each nailing strip 3/4" from the back edge. Coat the entire surface with the roof coating.

Flashing—(Copy from J-M Standard Specification for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

15 YEAR BUILT-UP ROOF SMOOTH SURFACED • ASPHALT • ASBESTOS AND RAG FELTS INCLINES 1/4 IN. TO 9 INS. PER FT._______SPECIFICATION NO. 201

ROOF DECK

- (a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.
 - (b) Nailing strips shall be furnished by others, as required, em-

bedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—(Same as for Specification No. 101, above, except change "55-lb. asbestos felt" to "50-lb. rag felt.")

Roofing—(Copy from Specification No. 101, changing "55-lb. asbestos felt" to "50-lb. rag felt," and change the spacing of the nails from 10" to 11".)

Flashing—(Copy from J-M Standard Specification for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Fifteen-Year Guaranty Bond.

SMOOTH SUINCLINES 1/4

RASE FELT: 1 layer of 1
FINISHING FELTS: 2
Rooing Felt 20-lb.

PRIMER: J-M Concrete P
Ther Concrete
Over Giplam
ASPHALT: J-M Bonded

ROOF COATING: J-M R

(a) Roof construction properly graded to gu smooth clean, sound, the robust.

(b) Nailing strips s

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BILL OF MA
FELTS: Lucevi J-M Asp
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ASPHALT: J-M Bonded R
FELTS: Graphication
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ASPHALT: J-M Concre

(a) Roof construction
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Nating street

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General—If the pitch
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e 3" to the foot, the
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she lists shall be tout, the
concerned thereto. The se
me up a distance 6"
shall overhank all
be direct through flat

22

10 YEAR BUILT-UP ROOF SMOOTH SURFACED • ASPHALT • ASBESTOS AND RAG FELTS INCLINES 1/4 IN. TO 9 INS. PER FT. ________SPECIFIC ATION NO. 203

BILL OF MATERIALS PER 100 SQ. FT.

BASE FELT: 1 layer of J-M No. 30 Combination Base Felt 33 FINISHING FELTS: 2 layers of J-M Asphalt-Saturated Asbestos	½ lb.
Roofing Felt 20-lb.	40 lb.
PRIMER: J-M Concrete Primer (8 lb. per gal.):	
Over Concrete	1 001
Over Gypsum	2 gar.
ASPHALT: J-M Bonded Roofing Asphalt	90 Ib.
ROOF COATING: J.M Regal Roof Coating (Black) (8 lb. per gal.).	1 gal.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, em-

bedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—(Same as for Specification No. 101 opposite, except change "55-lb. asbestos felt" to "33½-lb. rag felt.")

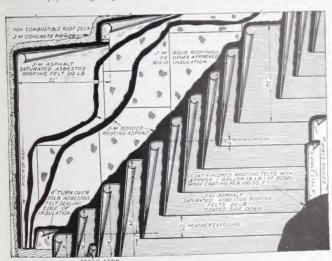
Roofing—(Copy from Specification No. 101 opposite, changing "55-lb. asbestos felt" to "33½-lb. rag felt," and change the spacing of the nails from 10" to 11".)

Flashing—(Copy from J.M Standard Specification for Flashing, base 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Ten-Year Bond.



BILL OF MATERIALS PER 100 SQ. FT.

FELTS: 4 layers of J-M Asphalt-Saturated Asbestos Roofing Felt, 20-lb.	80 lb.
(An additional ply of 20-lb. asbestos felt is specified in Specification	
No 501 for application under the insulation)	
ASPHALT. LM Bonded Roofing Asphalt	
For mopping felt and insulation to deck, additionalapprox.	40 10.
DDIMED. IM Concrete Drimer (8 lb per 93).):	
Over Concrete	I gai.
Once Cabring	- D
ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.).	1 gar.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—If the pitch of the roof is 3" to the foot or less, the felts shall be laid at right angles to the pitch. If the pitch of the roof is over 3" to the foot, the felts shall be laid to parallel the pitch. The roof felts shall be turned up 2" on all vertical surfaces without being cemented thereto. The felt applied under insulation shall be similarly turned up a distance 6" greater than the thickness of such insulation and shall overhank all roof edges a similar amount. All nails shall be driven through flat metal disks.

JOHNS-MANVILLE

20 YEAR BUILT-UP ROOF

SMOOTH SURFACED— ASPHALT— ASBESTOS FELTS

OVER INSULATION ON NON-COMBUSTIBLE DECKS*

INCLINES 1/4 IN. TO 9 INS. PER FT. SPECIFICATION NO. 105

Insulation—(Copy from J-M Standard Specification No. 501, page 32.)

Roofing—Lay four plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 24½" over the preceding one, mopping the full width under each with the asphalt or, if job conditions make it desirable to apply the roofing in two operations, lay two plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 17" over the preceding one, mopping the full width under each with the asphalt, and over these felts lay two additional plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 17" over the preceding one, mopping the full width under each with the asphalt.

If pitch of roof exceeds 3" to the foot, and roof construction permits, each sheet shall be nailed at 9" centers adjacent to the back edge. With nailing strips provided as required, nail each sheet at each nailing strip, all nails to be placed so as to be covered by not less than two plies of felt.

Coat the entire surface with the roof coating.

Flashing—(Copy from J-M Standard Specification for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

^{*}For application of insulation, see Specification No. 501, page 32.

15 YEAR BUILT-UP ROOF

SMOOTH SURFACED • ASPHALT • ASBESTOS FELTS OVER INSULATION ON NON-COMBUSTIBLE DECKS

INCLINES 1/4 IN. TO 9 INS. PER FT.

SPECIFICATION NO. 107

BILL OF MATERIALS PER 100 SQ. FT.

FELTS: 3 layers of J-M Asphalt-Saturated Asbestos Roofing Felt 20-lb.		
(An additional ply of 20-lb, asbestos felt is specified in Specification		
No. 501 for application under the insulation)	60) lb
ASPHALT: J-M Bonded Roofing Asphalt	90	11
For mopping insulation to deckapprox.	40	11
For mopping each additional ply of insulation	30	11
PRIMER: J-M Concrete Primer (8 lb. per gal.):		
Over Concrete	1	gal
Over Gypsum 11/2 to	2	gal
ROOF COATING: J-M Regal Roof Coating (Black) (8 lb. per gal.).	1	ga

ROOF DECK

- (a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.
- (b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—If the pitch of the roof is 3" to the foot or less, the felts shall be laid at right angles to the pitch. If the pitch of the roof is over 3" to the foot, the felts shall be laid to parallel the pitch. The roof felts shall be turned up 2" on all vertical surfaces without being

cemented thereto. The felt applied under insulation shall be similarly turned up a distance 6" greater than the thickness of such insulation and shall over-hang all roof edges a similar amount. All nails shall be driven through flat metal disks.

Insulation—(Copy from J-M Specification No. 501, page 32.)

Roofing—Lay three plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 22" over the preceding one, mopping the full width under each with the asphalt.

If pitch of roof exceeds 3" to the foot, and roof construction permits, each sheet shall be nailed at 9" centers adjacent to the back edge. With nailing strips provided as required, nail each sheet at each nailing strip, all nails to be placed so as to be covered by not less than two plies of felt.

Coat the entire surface with the roof coating.

Flashing—(Copy from J-M Standard Specification for Flashing, page 33.)

If a bond is required, add the following:

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Fifteen-Year Guaranty Bond.

JOHNS-MANVILLE

20 YEAR BUILT-UP ROOF

SLAG OR GRAVEL SURFACED— ASPHALT—RAG FELTS

OVER BOOK TILE, POURED OR PRECAST CONCRETE OR POURED GYPSUM DECKS

INCLINES 1/4 IN. TO 2 INS. PER FT.
SPECIFICATION NO. 302

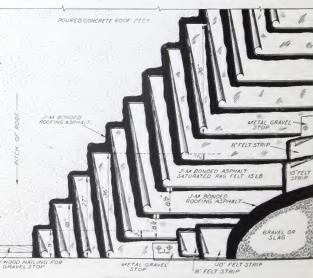
BILL OF MATERIALS PER 100 SQ. FT.

FELTS: 4 layers of J-M Bonded Asphalt-Saturated Rag Felt 15-	lb
(16 ¹ ₄ lb. per 108 sq. ft.)	
PRIMER: J-M Concrete Primer (8 lb per gal.) over Gypsum 11	/2 to 2 gal
ASPHALT: J.M Bonded Rooting Asphalt.	g 175 lb
SURFACING: Gravel	- 400 lb
or Slag	300 lb

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing



INSTALLATION

General—All roofing felts shall be turned up 2" on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—If application is over gypsum, coat all surfaces which are to receive the roofing with the asphalt primer and allow to dry.

Lay four plies of the 15-lb. rag felt, lapping each sheet $27\frac{1}{2}$ " over the preceding one, mopping the full width under each with the asphalt and, if roof construction permits, nailing at 12" centers, 3" from the back edge.

If roof construction is of precast concrete, the asphalt applied to the roof surface shall be omitted for a width of 4" each side of all joints between the slabs.

Over the entire surface pour a uniform coating of the asphalt and embed therein, while hot, not less than 400 lbs. of gravel or 300 lbs. of slag for each 100 sq. ft. of roof surface.

(Continued on opposite page)

Pushing—(Copy from a

15 YEAR BUILT SLAG OR GRA OVER BOOK TILE, I INCLINES 1/4

BILL OF MAT

, Ib. per 108 sq. ft. 1
MIMER: J.M. Concrete Primer
ASPHALT: J.M. Bonded Roo
SURFACING: Crive
(N.48

(a) Roof construction, properly graded to gutte smooth clean, sound, and the maing.

(b) Nating strips shall bedded in the wall structu

General—All roofing f surfaces without being ce through flat metal disks.

10 YEAR BUILT SLAG SURFAC OVER POURED OR INCLINES 2 1

BILL OF MA

PLINER: J.M. Concrete Pri FELTS: 4 layers of J.M. B. GAPHALT: J.M. Bonded R. SUFFACING: Slag

(2) Roof construction properly graded to gutt mooth clean, sound, as the moting. (b) Nating strips sh bedded in the wall struct

General—All roofing surfaces without being a bangh flat metal disks Roofing—If applicating receive the roofin

24

OVER NON-COMBUSTIBLE DECKS

(Continued from opposite page)

Flashing—(Copy from J-M Standard Specification for Flashing page 33.) (If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

15 YEAR BUILT-UP ROOF SLAG OR GRAVEL SURFACED • ASPHALT • RAG FELTS OVER BOOK TILE, POURED OR PRECAST CONCRETE OR POURED GYPSUM DECKS INCLINES 1/4 IN. TO 2 INS. PER FT. ________SPECIFICATION NO. 305

BILL OF MATERIALS PER 100 SQ. FT.

FELTS: 3 layers of J-M Bonded Asphalt-Saturated Rag Felt 15-lb.
(161/4 lb. per 108 sq. ft.)
PRIMER: J-M Concrete Primer over Gypsum 11/2 to 2 gal.
ASPHALT: J-M Bonded Roofing Asphalt
SURFACING: Gravel
or Slag

ROOF DECK

- (a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.
- (b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

Roofing—If application is over gypsum, coat all surfaces which are to receive the roofing with the primer and allow to dry.

Lay three plies of the 15-lb. rag felt, lapping each sheet 24% over the preceding one, mopping the full width under each with the asphalt and, if roof construction permits, nailing at 12" centers, 3" from the back edge.

If roof construction is of precast concrete, the asphalt applied to the roof surface shall be omitted for a width of 4" each side of all joints between the slabs.

Over the entire surface pour a uniform coating of the asphalt and embed therein, while hot, not less than 400 lbs. of gravel or 300 lbs. of slag for each 100 sq. ft. of roof surface.

Flashing—(Copy from J-M Standard Specification for Flashing, page 33.)

(If a bond is required, add the following:)

INSTALLATION

General—All roofing felts shall be turned up 2" on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Fifteen-Year Guaranty Bond.

10 YEAR BUILT-UP ROOF SLAG SURFACED • ASPHALT • RAG FELTS OVER POURED OR PRECAST CONCRETE OR POURED GYPSUM DECKS INCLINES 2 INS. TO 4 INS. PER FT._______SPECIFIC ATION NO. 303

BILL OF MATERIALS PER 100 SQ. FT.

PRIMER: J-M Concrete Primer over Gypsum 11/2 t	to 2 gal.
EFITC. 4 lauge of IM Bonded Asphalt-Saturated Rag Felt 17-10.	
(161/ 16 100 (6)	0 / 101
ACDUALT. IM Deaded Report	107 100
SURFACING: Slag	270 10.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All roofing felts shall be turned up 2" on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—If application is over gypsum, coat all surfaces which are to receive the roofing with the primer and allow to dry.

Lay four plies of the 15-lb. rag felt, lapping each sheet $27\frac{1}{2}$ " over the preceding one, mopping the full width under each with the asphalt and, if roof construction permits, nailing at 12" centers, 3" from the back edge.

If roof construction is of precast concrete, the asphalt applied to the roof surface shall be omitted for a width of 4" each side of all joints between the slabs.

With nailing strips provided as required, nail each sheet at each nailing strip with two nails spaced 8" and 10" respectively from the back edge.

Over the entire surface mop a uniform coating of the asphalt and embed therein, while hot, not less than 250 lbs. of slag for each 100 sq. ft. of roof surface.

Flashing—(Copy from J-M Standard Specifications for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Ten-Year Guaranty Bond.

JOHNS-MANVILLE

20 YEAR BUILT-UP ROOF

SLAG OR GRAVEL SURFACED— PITCH (TAR)— ASBESTOS FELTS*

OVER BOOK TILE, POURED OR PRECAST CONCRETE DECKS INCLINES 1/4 IN. TO 1 IN. PER FT.

OVER POURED GYPSUM DECKS INCLINES 1/4 IN. TO 2 INS. PER FT.

SPECIFICATION NO. 602*

BILL OF MATERIALS PER 100 SQ. FT.

*FELTS: 4 layers of J-M Tar-Saturated Asbestos Roofing Felt 15-lb.		
(16 ¹ 4 lb. per 108 sq. ft.)	65	1Ь.
PITCH: J-M Bonded Roofing Pitch.	1-5	lb.
SURFACING: Gravel	400	IЬ.
or Slag	300	lb.

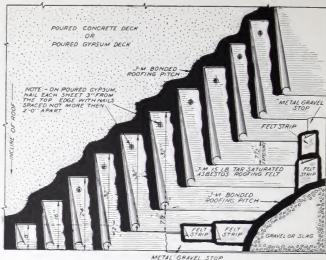
ROOF DECK

- (a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.
- (b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—All roofing felts shall be turned up 2" on all vertical surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing—Lay four plies of the 15-lb. tar-saturated roofing felt, lapping each sheet 241/2" over the preceding one, mopping the full width under each with the pitch. If roof construction is of



METAL GRAVEL ST

poured gypsum, nail each sheet at 24" centers, 3" from the back edge. If roof construction is of precast concrete, the pitch applied to the roof surface shall be omitted for a width of 4" each side of all joints between the slabs.

Over the entire surface pour a uniform coating of the pitch and embed therein, while hot, not less than 400 lbs. of gravel or 300 lbs. of slag for each 100 sq. ft. of roof surface.

Flashing—(Copy from J-M Standard Specification for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

*A built-up roof of this same construction is available, differing only in the use of "rag" instead of "asbestos" felt. To specify, make following changes:

SPECIFICATION NO. 702

FELTS: (Change name of felt to "J-M Bonded Tar Saturated Rag Felt 15 lb.")

15 YEAR BUILT-UP ROOF

SLAG OR GRAVEL SURFACED • PITCH (TAR) • ASBESTOS FELTS*

OVER BOOK TILE, POURED OR PRECAST CONCRETE DECKS • INCLINES 1/4 IN. TO 1 IN. PER FT.

OVER POURED GYPSUM DECKS • INCLINES 1/4 IN. TO 2 INS. PER FT. • SPECIFIC ATION NO. 605*

BILL OF MATERIALS PER 100 SO. FT.

*FELTS: 3 layers of J-M Tar-Saturated Asbestos Roofing Felt 15-lb.	
(161/4 lb, per 108 sq. ft.)	49 lb.
PITCH: J-M Bonded Roofing Pitch	150 lb.
SURFACING: Gravel	400 lb.
or Slag	300 lb.

ROOF DECK

(Same as for Specification No. 602 above.)

INSTALLATION

General-(Same as for Specification No. 602 above.)

Roofing—Lay three plies of the 15-lb. tar-saturated roofing felt, lapping each sheet 22" over the preceding one, mopping the full width under each with the pitch. If roof construction is of poured gypsum, nail each sheet at 24" centers, 3" from the back edge.

If roof construction is of precast concrete, the pitch applied to the

roof surface shall be omitted for a width of 4" each side of all joints between the slabs.

Over the entire surface pour a uniform coating of the pitch and embed therein, while hot, not less than 400 lbs. of gravel or 300 lbs. of slag for each 100 sq. ft. of roof surface.

Flashing—(Copy from J-M Standard Specification for Flashing, page 33.)

GUARANTEE

(Same as for Specification No. 602 above, except change to "Fifteen-Year.")

*A built-up roof of this same construction is available, differing only in the use of "rag" instead of "asbestos" felt. To specify, make following changes:

SPECIFICATION NO. 705

FELTS: (Change name of felt to "J-M Bonded Tar Saturated Rag Felt 15 lb.") 10 YEAR BUIL SLAG SURFA OVER POURED COL OVER POURED GY

BILL OF MA

STE CING

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Condition 1 for plants of the plants of the

JOHNS-MANVIL 20 YEAR BU

SLAG OR GRAVEL SU PITCH (TA

ASBESTOS
OVER POURED COMPOURED GYPSUM I

SPECIFICA SPECIFICA

BILL OF MAT

FRITS: 4 laters of J-M Tar

A PORTION SQL ACCOUNT

REFACING: (M. Bonded Roofing

STRACING: Gravel

Slag

Roof construction, properly graded to gutte.

8 strips shall the wall structu

General—All roofing fe savery surfaces and 4" or second thereto. All nails

J.M STA

26

10 YEAR BUILT-UP ROOF

SLAG SURFACED . PITCH (TAR) . ASBESTOS FELTS*

OVER POURED CONCRETE DECKS . INCLINES 1 IN. TO 6 INS. PER FT.

OVER POURED GYPSUM DECKS . INCLINES 2 INS. TO 6 INS. PER FT. . SPECIFIC ATION NO. 603*

BILL OF MATERIALS PER 100 SQ. FT.

•FELTS: 4 layers of J-M Tar-Saturated Asbestos Roofing Felt 15-lb.		
161/4 lb. per 108 sq. ft.)	65 lb.	
PITCH: J.M Bonded Roofing Pitch ASPHALT: J.M Bonded Roofing Asphalt (for top surfacing only).	65 lb.	
арргох	45 lb.	
SURFACING: Slag	250 lb	

ROOF DECK

(Same as for Specification No. 602 on opposite page.)

INSTALLATION

General—(Same as for Specification No. 602 opposite.)

Roofing-Lay four plies of the 15-lb. tar-saturated roofing felt. lapping each sheet 241/2" over the preceding one. These felts shall be cemented to the roof by path-moppings of the pitch, such moppings to be run parallel to the incline, to be not less than 12" nor more than 18" wide, the distance between to be not more than twice the width of such moppings. These felts shall also be cemented to each other continuously by mopping under each with the pitch to a width of 18", starting 2" from the exposed edge. If roof construction permits, nail each sheet at 12" centers, 10" from the back edge.

With nailing strips provided as required, nail each sheet at each nailing strip with two nails spaced 8" and 10" respectively from

Over the entire surface mop a uniform coating of the asphalt and embed therein, while hot, not less than 250 lbs. of slag for each

Flashing-(Copy from J-M Standard Specification for Flashing,

GUARANTEE

(Same as for Specification No. 602 on opposite page, except change

A built-up roof of this same construction is available, differing only in the use of "rag" instead of "asbestos" felt. To specify, make following changes:

SPECIFICATION NO. 703

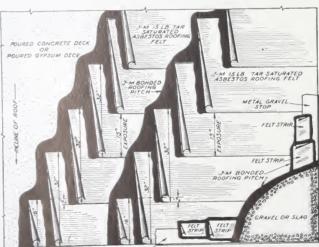
FELTS: (Change name of felt to "J-M Bonded Tar Saturated Rag Felt 15 lb.")

JOHNS-MANVILLE 20 YEAR BUILT-UP ROOF

SLAG OR GRAVEL SURFACED-PITCH (TAR)-**ASBESTOS FELTS***

OVER POURED CONCRETE OR POURED GYPSUM DECKS

INCLINES LESS THAN 1/4 IN. PER FT. SPECIFICATION NO. 613*



-METAL GRAVEL

BILL OF MATERIALS PER 100 SQ. FT.

*FELTS: 4 layers of J-M Tar-Saturated Asbestos Roofing Felt 15-lb.	/ s 11h
(161/. lb pag 109 cg (t)	0) 10.
PITCH, IM Bondad Bookson Ditch	
SIDEACING, Cassal	100 100
or Slag	,00 10.

ROOF DECK

(a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General-All roofing felts shall be turned up 2" on all vertical masonry surfaces and 4" on all vertical wood surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Roofing-Lay two plies of the 15-lb. tar-saturated felt, lapping each sheet 17" over the preceding one, mopping the full width under each with the pitch. Over these felts, lay two additional plies of the 15-lb. tar-saturated roofing felt, lapping each sheet 17" over the preceding one, mopping the full width under each with the pitch.

Over the entire surface pour a uniform coating of the pitch and embed therein, while hot, not less than 400 lbs. of gravel or 300 lbs, of slag for each 100 sq. ft. of roof surface.

Flashing (Copy from J-M Standard Specification for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

(Same as for specification No. 602, on opposite page.)

*A built-up roof of this same construction is available, differing only in the use of "rag" instead of "asbestos" felt. To specify, make following changes

SPECIFICATION NO. 713

FELTS: (Change name of felt to "J-M Bonded Tar Saturated Rag Felt 15 lb.")

SLAG OR GRAVEL SURFACED— PITCH (TAR)— ASBESTOS FELTS*

OVER INSULATION
ON POURED CONCRETE DECKS
INCLINES 1/4 IN. TO 1 IN. PER FT.

ON POURED GYPSUM DECKS INCLINES 1/4 IN. TO 2 INS. PER FT.

SPECIFICATION NO. 607*

BILL OF MATERIALS PER 100 SQ. FT.

• FELTS: (Under Insulation) 1 layer of J-M Tar-Saturated Asbestos Felt 15-lb. (1614 lb. per 108 sq. ft.)	1614	16
*FELTS: (In Built-Up Roof) 4 layers of J-M Tar-Saturated Asbestes Felt 15-lb. (161/4 lb. per 108 sq. ft.).	65	lb
PITCH: (Under Insulation) J-M Bonded Roofing Pitch	30	16
PITCH: (For Built-Up Roof) J-M Bonded Roofing Pitch	175	lb.
(for each layer of insulation)	Ú sq.	ft.
SURFACING: Gravel or Slag		

ROOF DECK

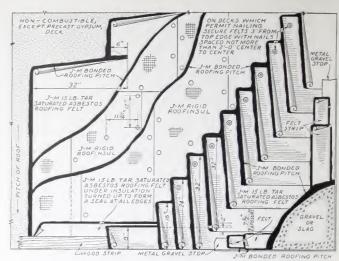
- (a) Roof construction, including cants, coves or fillets, shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.
- (b) Nailing strips shall be furnished by others, as required, embedded in the wall structure to which to secure the flashing.

INSTALLATION

General—All felts applied over the insulation shall be turned up 2" on all vertical masonry surfaces and 4" on all vertical wood surfaces without being cemented thereto. All nails shall be driven through flat metal disks.

Felt Under Insulation—Lay one ply of the 15-lb. tar-saturated felt, lapping the sheets 6", mopping the full width under each with the pitch. This felt shall be turned up on, but not cemented to, all vertical surfaces to a height 6" greater than the thickness of the insulation and shall overbang all roof edges a similar amount.

Insulation—Lay the Roufinial with the rough side down and with all end joints broken, mopping the full width under each sheet with the pitch. The edges of the sheets at the joints shall be thoroughly sealed with the pitch. The insulation shall be isolated into areas approximately 30' 0" square by path-strippings of one ply of the 15-lb, tar-saturated felt, mopped the full width with the pitch to extend not less than 4" over the edge of the insulation in place and not less than 4" under the adjoining insulation to be laid.



If roof construction is of poured gypsum, nail each sheet of the insulation at 12" centers adjacent to the longitudinal edges and staggered through the longitudinal center.

If to be applied in more than one layer, succeeding layers shall be applied and cemented in the same manner as the first layer, the sheets of each layer to break joints with those of the preceding layer with all nailing done through the top layer.

The over-hanging felt at roof edges shall be turned over and mopped solidly to the Roofinsul.

Insulation shall not be left exposed to the weather. No more insulation shall be laid than can be completely covered with the roofing felts on the same day. At the end of the day's work, roofing felts shall be turned down over the exposed edges of the insulation and mopped solidly.

Roofing—Lay four plies of 15-lb. tar-saturated felt, lapping each sheet 24½" over the preceding one, mopping the full width under each with the pitch. If roof construction is of poured gypsum, nail each sheet at 24" centers, 3" from the back edge.

Over the entire surface pour a uniform coating of the pitch and combed therein, while hot, not less than 400 lbs. of gravel or 300 lbs. of slag for each 100 sq. ft. of roof surface.

Not less than 230 lbs. of the pitch shall be used per 100 sq. ft. in completed roof.

Flashing-(Cap) from J-M Standard Specification for Flashing, page 33.)

(Il a band i required add the following)

GUARANTEE

The work shall be done by a routing contractor approved by the manufacturer. The routing contractor shall furnish a Johns-Marville Twenty-Year Guaranty Bond.

A built-up roof of this same construction is available, differing only in the use of 'rag' instead of 'asbestos' felt. To specify, make following changes:

SPECIFICATION NO. 707

FELTS: (Change name of felt to "J-M Bonded Tar Saturated Rag Felt 15 lb.")

20000 Common Com

OVER

BILL OF MATE

Under Insulation) :

Fig. 15-lb. (1-5) 4 lb.

III In Built-Up Roof) 3

The labelle Proof of Fee 15-lb. (1614 lb. Oh: Under Insulation) J. T. Chi For Built-Up Roof) J. ATION: J.-M. Rigid Root and J. ATION: J.-M. Rigid Root and J. ATION: Gravel J. T. ATION: J. ATION: Gravel J. T. ATION: J. ATION: Gravel J. T. ATION: J. ATION: J

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contral—(Same as for Specification)
Under Insulation—(

uon—(Same as for g—Lay three plies

10 YEAR BUILT-U SLAG SURFACE OVER INSULAT

ON POURED GYPSUM
BILL OF MATE

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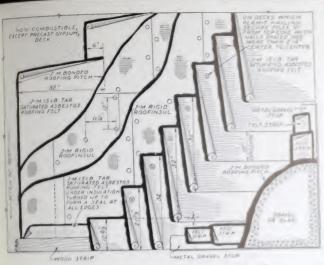
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Specification

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-Lay four plies

I-M cr



JOHNS-MANVILLE 15 YEAR BUILT-UP ROOF

SLAG OR GRAVEL SURFACED-PITCH (TAR)-ASBESTOS FELTS*

OVER INSULATION ON POURED CONCRETE DECKS INCLINES V4 IN. TO 1 IN. PER FT.

ON POURED GYPSUM DECKS INCLINES 1/4 IN. TO 2 INS. PER FT.

SPECIFICATION NO. 609

BILL OF MATERIALS PER 100 SQ. FT.

•FELT: (Under Insulation) 1 layer of J M Tar Salmatad Advan-Resting Felts 15 lb. (161a lb per 100 we H.)

•FELTS: (In Built-Up Roof) 3 layers of J M I are the second Roofing Felt 15 lb. (1614 lb per 101 eq. lt PITCH: (Under Insulation) J M Be and Remain Plant PITCH: (For Built-Up Roof) J.M. Board R. . . Proof INSULATION: J-M Read Restinated 19.8 Hz per any H to a looks (for each layer of insulation) SURFACING: Gravel

ROOF DECK

(Same as for Specification No. 607 opposite)

INSTALLATION

General (Same as for Specification No. 607 opposite) Felt Under Insulation (Same as for Spread after No not op-

posite) Insulation (Same as for Specification No root opposite) Roofing Lay three plies of the 15-lb tareasurated politics in a lapping right thent 22" over the preventing our, recepting the full words, under such such the prost if post oversection is of ground eryoun, not each sheet at \$4" centers at Jones the back wigo-

Over on more or that your a moreon reating of the grain and embed the one whose box are less than 400 flux of populars 400 the of size for each too eq. th. of real unities.

Flashing-Copy from J. M. Stanford Type Core 9 - Flashing.

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GUARANTEE

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APPELLIFICATION NO. 709

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10 YEAR BUILT-UP ROOF SLAG SURFACED . PITCH (TAR) . ASBESTOS FELTS* OVER INSULATION ON POURED CONCRETE DECKS. INCLINES 1 IN. TO 6 INS. PER FT. ON POURED GYPSUM DECKS . INCLINES 2 INS. TO 6 INS PER FT. SPECIFICATION NO. 611

BILL OF MATERIALS PER 100 SQ. FT offelds (Under Insulation) I lave of J.M. Tanadament Administration *FILTS: (In Built-Up Roof) + (cross of IA) To the last of the last PITCH; (Under Insulation) J M Bandar Brown Tree! 48 (0) PITCH: (For Built-Up Roofs) I M Readed Learn Form INSULATION, J.M. E.g.A. E. second (0.6 %), per by H., He mad ! REACING S'44 SURFACING S

ROOF DECK

(Same as for Specification No. 607 appoints.)

INSTALLATION

General (Same as for Specification Na 1007 exposure) Felt Under Insulation (Same as the Specification No. 1971 oppunite.)

Insulation (Same as for Specification Na. 607 appears) Roofing -Las four plies of the 15.15, recurrented recome full.

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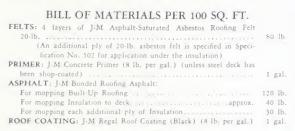
JOHNS-MANVILLE

20 YEAR BUILT-UP ROOF

SMOOTH SURFACED— ASPHALT— ASBESTOS FELTS

OVER INSULATION ON STEEL DECKS

INCLINES 1/2 IN. TO 9 INS. PER FT. SPECIFICATION NO. 108



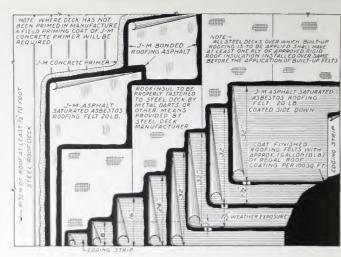
ROOF DECK

(a) Roof construction, including cants, coves or fillets shall be properly graded to gutters and roof drains, leaving all surfaces smooth, clean, sound, and dry, in satisfactory condition to receive the roofing.

(b) Nailing strips shall be furnished by others, as required, embedded in the wall structure, to which to secure the flashing.

INSTALLATION

General—If the pitch of the roof is 3" to the foot or less, the felts shall be laid at right angles to the pitch. If the pitch of the roof is over 3" to the foot, the felts shall be laid parallel to the pitch.



The roof felts shall be turned up 2" on all vertical surfaces without being cemented thereto.

Insulation—(Copy from J-M Standard Specification No. 502, page 32.)

Roofing—Lay four plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 24½" over the preceding one, mopping the full width under each with the asphalt or, if job conditions make it desirable to apply the roofing in two operations, lay two plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 17" over the preceding one, mopping the full width under each with the asphalt. Over these felts, lay two additional plies, applied in the same manner as the first two. Coat the entire surface with the roof coating.

Flashing—(Cop) from J-M Standard Specifications for Flashing, page 33.)

(If a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Twenty-Year Guaranty Bond.

15 YEAR BUILT-UP ROOF SMOOTH SURFACED * ASPHALT * ASBESTOS FELTS * OVER INSULATION ON STEEL DECKS • INCLINES 1/2 IN. TO 9 INS. PER FT. • SPECIFICATION NO. 109

BILL OF MATERIALS PER 100 SQ. FT.	
FELTS: 3 layers of J-M Asphalt-Saturated Asbestos Roofing Felt 20-lb. (An additional ply of 20-lb. asbestos felt is specified in Specification No. 802 for application under the insulation)	60 lb.
PRIMER: J-M Concrete Primer (8 lb. per gal.) (unless steel deck has been shape-c ated)	I gal
ASPHALT: J M Bunded Ruming August: For compring Built-Up Ruming. For compring Invalidation to deck. For compring each additional ply of Invalidation	60 lb. 50 lb. 50 lb
ROOF COATING: J-M Regal Roof Coating (Black) (R lb per gal.)	1 gal,

DILL OF MATERIALS DED 100 SO ET

ROOF DECK

(Same as for Specification No. 108 above,)

INSTALLATION

General—(Same as for Specification No. 108 above)
Insulation—(Copy from J-M Standard Specification No. 502, page 32-)

Roofing—Lay three plies of the 20-lb. asbestos felt, with the coated side down, lapping each sheet 22" over the preceding one, miopping the full width under each with the asphalt. Coat the entire surface with the roof coating.

Flashing—(Copy from J-M Standard Specifications for Flashing, base 33.)

(1) a bond is required, add the following:)

GUARANTEE

The work shall be done by a roofing contractor approved by the manufacturer. The roofing contractor shall furnish a Johns-Manville Fitteen-Year Guaranty Bond.

PROTECTING

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PROTECTING INSULATED ROOFS AGAINST HUMIDITY

For many years it has been generally recognized that wherever humid conditions may be encountered, it is essential that roof insulation be protected on the underside against the absorption of moisture. Specifications of architects and roofing manufacturers have, therefore, called for a membrane waterproofing course under the insulation wherever it was known at the time the roof was designed that the insulation would be subjected to such conditions.

But there are occasions when, after a relatively few years, there is a change in the use to which a building is put. From an operation not in the least humid, the condition may change almost overnight into one which exposes the insulation to severe moisture conditions.

All types of roof insulation will absorb moisture. The very factor that makes the material effective as an insulation — porosity — is, of course, responsible for its ready absorption of moisture. When insulation on a roof becomes water-soaked, the results are:

- (A) A serious reduction in insulating efficiency
- (B) Destruction of bond between insulation and roofing felts.
- (C) Disintegration of the insulating material.
- (D) Almost certain damage to the roof deck itself.
- (E) Possible damage to the building contents.
- (F) An expensive re-roofing and re-insulation job.
- All Johns-Manville Roof Insulation Specifications call for the application of a layer of roofing felt under the insulation.

JOHNS-MANVILLE ROOF INSULATION J-M RIGID ROOFINSUL OVER WOOD SHEATHING

TO BE OVERLAID
WITH A J-M ASPHALT
BUILT-UP ROOF
SPECIFIC ATION NO. 500

BILL OF MATERIALS PER 100 SQ. FT.

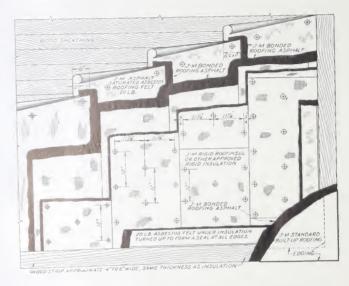
FELT: 1 layer of J-M Asphalt-Saturated Asbestos Roofing Felt 20-lb-	
(under insulation)	20 lb.
INSULATION: J-M Rigid Roofinsul (0.8 lb. per sq. ft., 1/2" thick)	
(for each ply of insulation)	80 lb.
ASPHALT: J.M Bonded Roofing Asphalt-mopping per ply of in-	
sulation	30 lb.

ROOF DECK

As J-M Rigid Roofinsul (roof insulation) requires, and is designed to receive, built-up roofing directly over it, the following specification has been prepared to be appended to certain Standard Specifications for J-M Asphalt Built-Up Roofs. Such roofs, designed particularly for application over approved rigid insulations over wood sheathing, are designated as Standard Specification Nos. 104 and 106. The roof deck, before being considered satisfactory to receive the insulation, that be in the condition outlined in the roof specification.

INSULATION

- (a) Lay one ply of the 20-lb. asbestos felt, lapping the sheets 6", mopping in the laps with the asphalt and nailing sufficiently to hold in place. This felt shall be turned up on, but not cemented to, all vertical surfaces to a height 6" greater than the thickness of the insulation and shall overhang all roof edges a similar amount.
- (b) Lay the Roofinsul with the rough side down and with all end joints broken, mopping the full width under each sheet with the



asphalt. The edges of the sheets at the joints shall be thoroughly sealed with the asphalt.

(c) The insulation shall be isolated into areas approximately 30 ft. square by path-strippings of one ply of the 20-lb. asbestos felt, mopped the full width with the asphalt, to extend not less than 4" over the edge of the insulation in place and not less than 4" under the adjoining insulation to be laid.

NAILING

Each sheet of the insulation shall be nailed at 12" centers adjacent to the longitudinal edges and staggered through the longitudinal center. If it be applied in more than one layer, succeeding layers shall be applied in the same manner as the first layer, the sheets of each layer to break joints with those of the preceding layer with all nailing done through the tep layer.

SEALING

The upturned felt at vertical surfaces and roof edges shall be turned down and mopped solidly to the Roofinsul.

PROTECTION

Insulation shall not be left exposed to the weather. No more insulation shall be laid than can be completely covered with the roofing felts on the same day. At the end of the day's work, roofing felts shall be turned down over the exposed edges of insulation and mopped solidly.

APPLICATION OF RIGID INSULATION

JOHNS-MANVILLE ROOF INSULATION

J-M RIGID ROOFINSUL ON NON-COMBUSTIBLE DECKS

TO BE OVERLAID
WITH A J-M ASPHALT
BUILT-UP ROOF

SPECIFICATION NO. 501

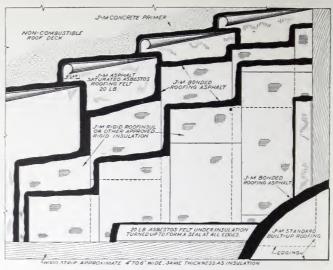
BILL OF MATERIALS PER 100 SQ	. FT.	
FELT: 1 layer of J-M Asphalt-Saturated Asbestos Roofing Fe		20 lb
INSULATION: J-M Rigid Roofinsul (0.8 lb. per sq. ft., 1/2		
(for each ply of insulation)		80 lb
PRIMER: J-M Concrete Primer (8 lb. per gal):		
Over Concrete		
Over Gypsum		2 gal
ASPHALT: J.M Bonded Roofing Asphalt-mopping per pl		
sulation		30 lb

ROOF DECK

(Same as for Specification No. 500, on previous page, except change second sentence to read, "... insulations over non-combustible decks, are designated as Standard Specification Nos. 105 and 107.")

INSULATION

(a) Coat all surfaces which are to receive the insulation with the asphalt primer and allow to dry.



(b) Lay one ply of the 20-lb. asbestos felt, lapping the sheets 6", mopping the full width under each with the asphalt. This felt shall be turned up on . . . (Balance, same as (a) for Specification No. 500.)

(c) (Same as paragraph (b) of Specification No. 500.) (d) (Same as paragraph (c) of Specification No. 500.)

NAILING

If roof construction permits, nail each sheet at 12" centers adjacent to the longitudinal edges and staggered through the longitudinal center. With nailing strips provided as required, each sheet shall be nailed at each strip at 12" centers.

SEALING AND PROTECTION

(Same as for Specification No. 500, on previous page.)

J-M RIGID ROOFINSUL OVER STEEL DECKS • MINIMUM PITCH 1/2 IN. PER FT. TO BE OVERLAID WITH A J-M ASPHALT BUILT-UP ROOF • SPECIFICATION NO. 502

ROOF DECK

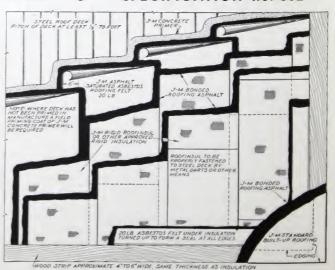
(Same as for Specification No. 500, on previous page, except change second sentence to read, "... insulations over steel decks, are designated as Standard Specification Nos. 108 and 109.")

INSULATION

- (a) If the steel deck has not been shop-coated with asphalt paint, or if such coating is incomplete or has been damaged, the entire deck or such uncoated areas shall be painted with the asphalt primer and allowed to dry.
 - (b) (Same as paragraph (b) for Specification No. 501.)
- (c) (Same as paragraph (b) for Specification No. 500.)
- (d) (Same as paragraph (c) for Specification No. 500.)

SECURING OF INSULATION

If the pitch of the roof deck is 3" per foot or greater, the insulation shall be secured by means of steel darts or other approved device. (Follow with the second sentence under "Nailing" in Specification 500, changing word "nailing" to "fastening."



SEALING AND PROTECTION

(Same as for Specification No. 500, on previous page)

JOHNS-MANVILLI ASBESTILE I

BASE FLASH

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J-M STANDARD BUILT-UP ROOF SPECIFICATIONS

JOHNS-MANVILLE

ASBESTILE FLASHING SYSTEM-10 YEAR BOND

Johns-Manville Flashing is constructed of the same basic materials as Johns-Manville Built-Up Roofs—asbestos felts, asphalt and Asbestile, a plastic asbestos-asphalt composition, being the main component parts. It may be installed to cover completely the top and inside face of parapet walls, to extend through walls, or to extend not less than 8" high on the inside face only. J-M Flashing may also be used with a sheet metal cap flashing built into the walls, or it may be used in conjunction with raggle blocks.

As Johns-Manville Flashing is used only in connection with Johns-Manville Built-Up Roofing, the following specification has been prepared to be appended to the Standard Specifications for such Built-Up Roofs.

The height of flashing on parapet walls shall be state whether ("not less than 8") or ("so as to cover completely entire inside face of wall and top of wall under coping to within 2" of outside face") or ("not less than 8" with cap flashing built into and extended through wall to form a damp-proof course."). If flashing is to be carried into raggle block, so state

The height of flashing on high walls shall be (state whether "same height as on adjoining parapet walls") or ("not less than 8", with cap flashing built into and extended through wall to form a dampproof course.")

All masonry surfaces which are to receive the base or cap flashing shall be coated with Concrete Primer and allowed to dry.

BASE FLASHING

Lay one thickness of the 15-lb. or 20-lb. roofing felt, to extend not less than 6" high on the vertical surface to be flashed, and not less than 4" on the roof, lapping the sheets 3", mopping the full width under each with the asphalt, or, if applied with roofs employing pitch, either such pitch or asphalt may be used.

A base flashing composed of J-M Asbestos Base Flashing Material shall be applied directly over and entirely covering the 15-lb. or 20-lb. roofing felt, cemented to it with the asphalt or pitch.

The base flashing shall be nailed, adjacent to its upper and end edges, with large head nails spaced at 8" centers driven into the brick joints or the nailing strip.

The edge of the base flashing on the roof shall be covered with a 4" wide strip of 15-lb. asbestos felt, embedded in and coated over with asphalt or, if applied in connection with roofs employing pitch,

such pitch shall be used.

The end joints shall be covered with Asbestile, as specified under "Cap Flashing."

On skylight curbs, etc., the flashing shall extend full height and turn over on top the full width of the curb.

If no nailing facilities have been provided for securing the upper edge of the base flashing, a five course cap and base flashing, will be acceptable, constructed of alternating layers of Asbestile and 15-lb. asbestos felt. Such flashing shall be applied in a manner similar to that specified below for the application of Cap Flashing to Full Height of Wall, repeating the operations described to provide three layers of Asbestile and two layers of felt. Such flashing shall extend on the vertical surfaces and on the roof the same distances as specified for the flashing method it displaces.

CAP FLASHING

WHEN J-M FLASHING IS SPECIFIED TO BE NOT LESS THAN 8 INS. HIGH OR WHEN SHEET METAL CAP FLASHING IS TO BE USED WITH J-M FLASHING (See drawings in right-hand column, next page.)

A layer of Asbestile, approximately ½" thick and not less than 5" wide, shall be troweled in place to cover the nail heads, the upper edge of the base flashing and the adjoining surface of the wall. A strip of 15-lb. asphalt saturated asbestos felt not less than 4" wide shall be embedded therein and a second layer of Asbestile, of the

same thickness as the first, troweled over and finished to a feather edge and to a straight line at the upper and lower edges. If a sheet metal cap flashing is specified, the Asbestile cap flashing shall extend to the point where such metal flashing protrudes from the wall.

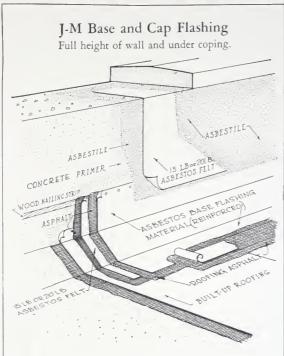
End laps in base flashing shall be similarly covered, as specified.

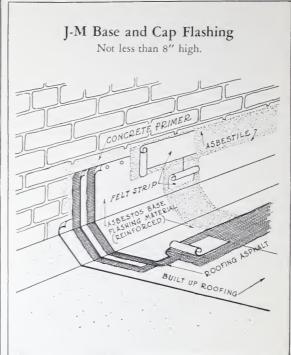
WHEN J-M FLASHING IS SPECIFIED TO COVER COMPLETELY FULL HEIGHT OF WALL AND TOP OF WALL UNDER COPING TO WITHIN 2 INS. OF OUTSIDE FACE (See drawing, top of left column, next page.)

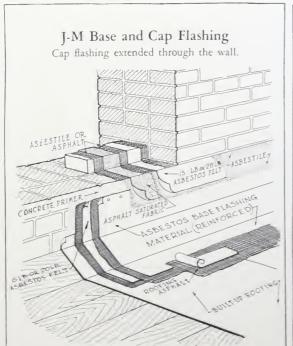
A layer of Asbestile, approximately 1/8" thick, shall be troweled in place to cover the nail heads and the upper edge of the base flashing not less than 4" and the entire inside face and top of the wall (under the coping) to within 2" of the outside face. One thickness of

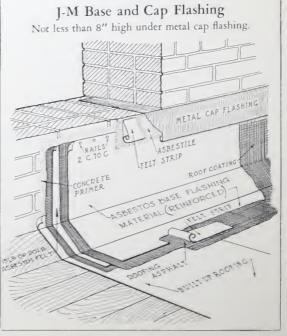
15-lb. asphalt saturated asbestos felt shall be embedded therein, with the sheets lapped 3" and sealed with Asbestile and a second layer of Asbestile, of the same thickness as the first, troweled over and finished to a feather edge and to a straight line at the lower edge.

DETAILS SHOWING VARIOUS METHODS OF FLASHING FOR JOHNS-MANVILLE BUILT-UP ROOFS









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CAP FLASHING

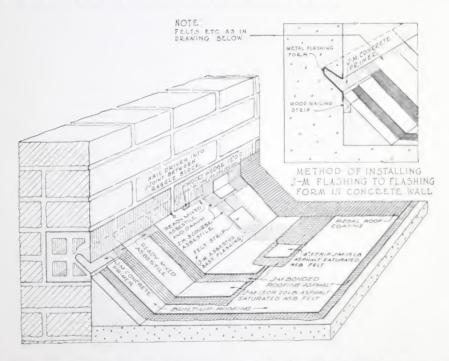
WHEN J-M FLASHING IS SPECIFIED TO BE NOT LESS THAN 8 INS. HIGH WITH CAP FLASHING BUILT INTO AND EXTENDED THROUGH WALL

(See bottom of left column, uppointe page.

One ply of J-M Type B Asphalt Saturated Fabric shall be applied to the temporary top of the wall, to extend from within 2" of the outside face to the inside face and project so as to cover the base flashing not less than 4". This fabric shall be cemented to the top of the wall with the asphalt or Asbestile. One ply of 15-lb. asphalt saturated asbestos felt shall be applied directly over and entirely covering the fabric, cemented to it, and coated over, with the asphalt or Asbestile. The projecting felts shall be temporarily covered for protection during the completion of the wall. After the wall has been completed and the roofing and base flashing installed, the tem-

porary protection shall be removed and a layer of Asbestile, approximately 1/8" thick, shall be troweled in place to cover the nail heads and the upper edge of the base flashing and the inside face of the wall to the underside of the projecting fabric and felt. The projecting fabric shall be embedded therein, over which shall be troweled a second layer of Asbestile, of the same thickness as the first, in which shall be embedded the projecting felt, over which shall be troweled a final layer of Asbestile of the same thickness as the preceding layers, finished to a feather edge and to a straight line at the lower edge and to the line of the projecting fabric and felt at the upper edge.

BASE FLASHING IN CONNECTION WITH RAGGLE BLOCK



The groove in the raggle block shall be coated with Concrete Primer and allowed to dry.

One thickness of the 15-lb, or 20-lb, roofing felt shall be applied to extend not less than 4" on the roof, to cover the cant entirely, and to extend to the full depth of the groove in the raggle block. This felt shall be embedded in asphalt, (or, if applied with roofs employing pitch, either such pitch or asphalt may be used) on the roof and cant, and in a layer of Asbestile approximately 18" thick in the groove in the raggle block.

One thickness of J-M Asbestos Base Flashing Material shall be applied directly over and entirely covering the 15-lb. or 20-lb. felt and similarly cemented to it with the asphalt or pitch and the Asbestile. The base flashing shall be nailed adjacent to the groove, into the joints between raggle blocks. At all joints of the base flashing material, and at 12" centers between, wood wedges, primed and

coated with Asbestile, shall be driven into the groove to prevent slippage of the flashing. Any remaining voids in the grooves thall be caulked with Asbestile and oakum. A layer of Asbestile, approximately 18" thick shall be traweled in place to extend not less than 3" on the cant and 2" on the face of the raggle block to entirely cover the groove in the raggle block

A strip of the 15-lb, or 20-lb, felt not less than 1" wide shall be embedded therein and a second layer of Asbestile iit the same trickness as the first, troweled over and finished to a feather edge and to a straight line at the upper and lower edges.

The edge of the base flashing on the roof shall be covered with a 4" wide strip of the 15-lb telt embedded in indicated over with asphalt or pitch

The end joints of the base flashing shall be covered with A berrie as specified under Cap Flashing

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At each of the offices listed below you will find representatives fully qualified to answer any questions about Johns-Manville products, and to assist you in problems where J-M Materials can be of service.

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